APPENDIX A

Capital Regional District

Solid Waste Management Plan

Prepared by:
MWA Environmental Consultants Ltd.

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Glossary

Advisory Committee	The Solid Waste Advisory Committee (see description below)
Disposal	Landfilling
Diversion	Activities that divert waste materials away from disposal as garbage to alternatives such as recycling or composting. Does not include combustion of garbage to produce energy.
Circular Economy	An economic system aimed at eliminating waste and the continual use of resources. Circular systems employ reuse, sharing, repair, refurbishment, remanufacturing and recycling to create a closed-loop system, minimizing the use of resource inputs and the creation of waste, pollution and carbon emissions
Controlled Waste	Selected waste materials that are not suitable for disposal on the active face of the landfill because of specific health and safety or environmental concerns associated with the physical or chemical properties of the waste. Items that are considered controlled waste include animal feces, sewage contaminated grit, catch basin waste and dead animals.
CRD	Capital Regional District
CR&D	Construction, renovation and demolition
EPR	Extended producer responsibility
(Waste) Generation	The sum of all materials discarded that require management as solid waste, including garbage, recycling and composting. Does not include organic waste composted at home.
ICI	Industrial, commercial and institutional (does not include heavy industry)
Ministry of Environment	BC Ministry of Environment & Climate Change Strategy
MSW	Based on BC's Environmental Management Act, municipal solid waste (MSW) is refuse that originates from residential, commercial, institutional, demolition, land clearing or construction sources, or refuse specified by a Ministry of Environment director to be included in a waste management plan
Organic Waste / Organics	Generally refers to kitchen scraps, food waste, yard and garden waste.
Plan	CRD's Solid Waste Management Plan
Producer Responsibility Organization	A "producer responsibility organization" (PRO), is usually a not-for-profit organization or an industry association, that is designated by a producer or producers to act on their behalf to administer an extended producer responsibility or product stewardship program (e.g. Encorp Pacific, Product Care Association, Recycle BC)
Recycle BC	Formerly MMBC (Multi-Material BC), the producer responsibility organization established to manage the residential packaging and paper products EPR program

Residuals / Residual Waste	Residual waste refers to discarded materials that are not diverted to reuse, recycling or composting and therefore require disposal
SWMP	Solid Waste Management Plan
Solid Waste Advisory Committee	A multi-stakeholder committee established to advise the CRD, and to provide input on matters related to solid waste management upon request by the CRD, including the development and implementation of the Solid Waste Management Plan.
Transfer Station	A site at which municipal solid waste or recyclable material is received from the general public and is sorted, compacted, consolidated or rearranged and stored for subsequent transfer off-site for further processing or final disposal.
Zero Waste	Zero waste is a philosophy and aspirational goal that envisions a point where nothing is wasted. It eliminates traditional concepts of managing waste materials and instead focuses on design for environment. It is intended as an approach to pursuing sustainability through circular economy and is aligned with the Pollution Prevention Hierarchy, seeking to move materials up the hierarchy from residual management through recovery, recycling, reuse and ultimately reduction.

1 Introduction

In British Columbia, regional districts develop solid waste management plans under the provincial Environmental Management Act that are high-level long term visions of how the regional district would like to manage its solid waste in accordance with the Pollution Prevention Hierarchy. This plan should ideally be renewed approximately every ten years to ensure that it reflects the current needs of the regional district, as well as current market conditions, technologies and regulations.

The Capital Regional District (CRD) initiated a process to update its 1995 Solid Waste Management Plan (SWMP) to identify goals and strategies for the next ten years. The SWMP update process considered existing solid waste management policies and programs; identified and evaluated options for reduction, diversion and residual management; and addressed system financing.

This draft document represents an update of the CRD's 1995 SWMP and once approved by the Province (along with any approval conditions), becomes a regulatory document for solid waste management in the CRD, and serves to guide solid waste management related activities and policy development. In conjunction with regulations and operational certificates that may apply, this plan regulates the operation of sites and facilities that make up the region's waste management system.

1.1 Guiding Principles

The principles guiding the development and implementation of this plan are a slightly modified version of those recommended in the BC Guide to Solid Waste Management Planning and were prepared by the CRD's Solid Waste Advisory Committee in June 2018 to enhance their clarity, and were subsequently approved by the CRD Board in October 2018. They are:

1. Promote zero waste approaches and influence others in support of a circular economy;
2. Promote the first 3Rs (Reduce, Reuse and Recycle);
3. Maximize beneficial use of waste materials and manage residuals appropriately;
4. Support polluter-pay and user-pay approaches and manage incentives to maximize positive behaviour outcomes;
5. Prevent organics, recyclables and hazardous household waste from going into the garbage wherever practical;
6. Collaborate with other jurisdictions wherever practical;
7. Develop collaborative partnerships with interested parties, both within and outside of the CRD, to achieve regional targets set in plans; and
8. Level the playing field within regions for private and public solid waste management facilities.

1.2 Plan Goals

The Province's guidelines for solid waste management planning require Solid Waste Management Plans to have goals and targets. Goals are the long-term aims to be achieved as an outcome of the plan. A goal may be achieved within the timeframe of this plan, but a goal may also be aspirational; something for the CRD to strive for beyond the timeframe of this plan. Targets (see section 1.3), on the other hand, are a way of measuring the plan's progress and have clear timelines.

The goals for this plan are:

1. To surpass the provincial per capita waste disposal target and aspire to achieve a disposal rate of 125 kg/capita/year;
2. To extend the life of Hartland Landfill to the year 2100 plus;
3. To have informed citizens that participate effectively in proper waste management practices; and
4. To ensure that the CRD's solid waste services are financially sustainable.

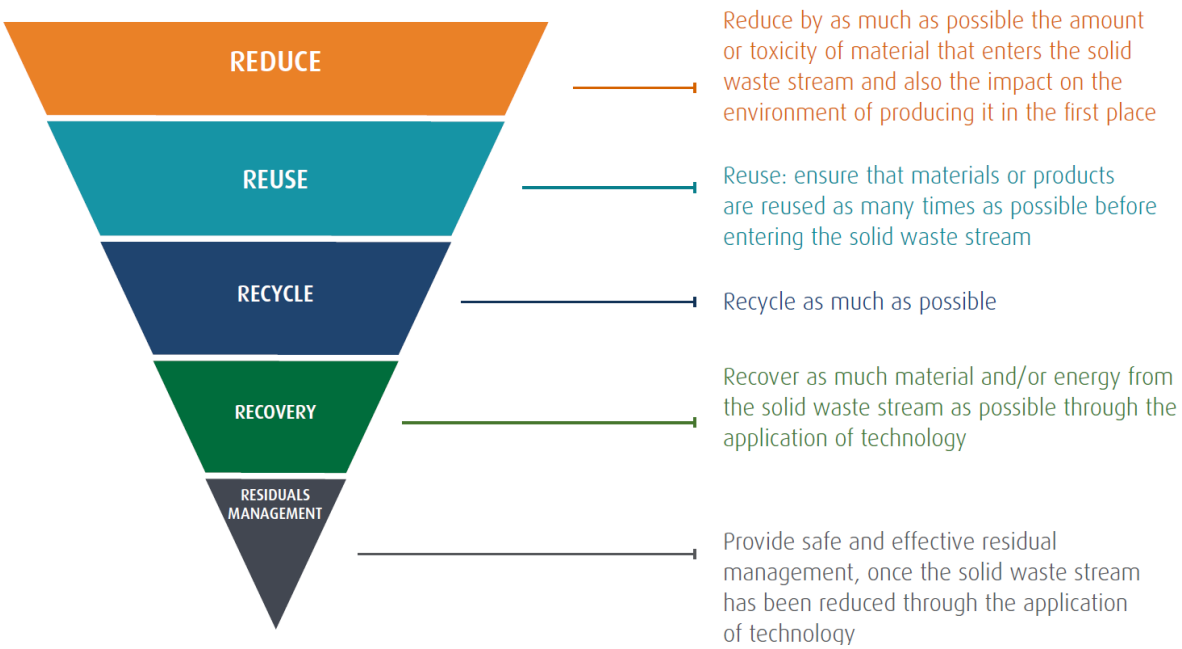
These goals were established by the Solid Waste Advisory Committee in 2018 based on a review of the Existing System Report, and a discussion of the challenges and opportunities presented by the current system. The first goal associated with reducing the amount of waste disposed was refined in 2020 based on further input from the Solid Waste Advisory Committee to include an aspirational disposal target of 125 kg per capita.

1.3 Pollution Prevention Hierarchy

This plan adopts the 5R Pollution Prevention Hierarchy (see Figure 1-1). Strategies to address each tier in the hierarchy are laid out in Section 5. Implementation of these strategies over the plan's 10-year timeframe is expected to contribute to the provincial disposal rate target of 350 kg per person (capita), and result in achievement of the following regional targets. These targets are discussed further in Section 8.

1. By the end of the 3rd year of this plan, the CRD's per capita disposal rate will be 340 kg or less.
2. By the end of the 5th year of this plan, the CRD's per capita disposal rate will be 285 kg or less.
3. By the end of the 10th+ year of this plan, the CRD's per capita disposal rate will be 250 kg or less.

Figure 1-1: 5R Pollution Prevention Hierarchy



1.4 Climate Change and the Solid Waste Management Plan

What we consume and how we dispose of it contributes to climate change. Greenhouse gas emissions are generated from the management of waste in the region—primarily from decomposing garbage, especially organic waste like food scraps and wood, but also from transportation and management.

We can reduce our collective emissions by decreasing the amount of waste we produce and by managing Hartland Landfill in a sustainable manner. By finding beneficial ways to use our waste materials, we can also displace other sources of greenhouse gas emissions in the region.

In 2019, the CRD Board identified Climate Action & Environmental Stewardship as a priority for the region and approved a motion to declare a climate emergency. The goals and guiding principles of this plan build upon the 5R Pollution Prevention Hierarchy, focusing first on strategies that promote zero waste and support a circular economy to reduce the greenhouse gas emissions associated with producing materials that eventually become waste. This plan also considers strategies to beneficially use waste as a resource and to manage the residual waste stream to minimize fugitive emissions.

Greenhouse gas emissions associated with the 5th R – residuals management, are generated from the disposal of residual waste in the region—primarily from decomposing garbage, especially organic waste like food scraps and wood, but also from transportation and management.

What we consume, the production of new products and extraction of raw materials and how we manage items at end-of-life all contribute to climate change. We can reduce our collective emissions by decreasing the amount of waste we produce, and managing Hartland Landfill in a sustainable manner. By finding beneficial ways to use our waste materials, we can also displace other sources of greenhouse gas emissions in the region.

1.4.1 Hartland Landfill's Contribution to Greenhouse Gas Emissions

When organic matter decomposes within the landfill, it produces gas which is mainly made up of carbon dioxide and methane, a very potent greenhouse gas. Landfills are typically one of the largest contributors of greenhouse gas emissions in the community. In 2020, the CRD completed a regional greenhouse gas emissions inventory based on a recognized global standard (called the GPC Basic+) to measure emissions generated locally from buildings, transportation and waste. Total regional emissions are approximately 1.7 million tonnes of carbon dioxide equivalents. Waste contributes approximately 5% of the region's greenhouse gas emissions, with Hartland Landfill accounting for the majority[1].

The CRD is actively working to improve landfill gas collection efficiency and produce renewable natural gas using captured methane from the historical waste decomposing in the landfill in addition to minimizing any fugitive emissions. Strategy 14, 'Optimize Landfill Gas Management', will support and accelerate this work.

1.5 Alignment with Other CRD Strategies and Plans

The SWMP is aligned with several other CRD strategies and plans. Figure 1-2 shows each of these strategies and plans and how they are linked with this plan.

[1] Source: Capital Regional District 2018, GPC BASIC+ Community Greenhouse Gas Emissions Inventory Report (Stantec, August 2020).

1.6 Alignment with Provincial Targets

The Province has two solid waste performance targets:

1. Lower the provincial municipal solid waste (MSW) disposal rate to 350 kg per capita; and
2. 75% of BC's population covered by organic waste disposal restrictions.

The CRD supports these two provincial goals through its current solid waste management system, which prohibits the disposal of both kitchen scraps and yard waste at Hartland Landfill, and through this SWMP which presents strategies that aim to reduce the per capita disposal rate to even less than 350 kg per capita.

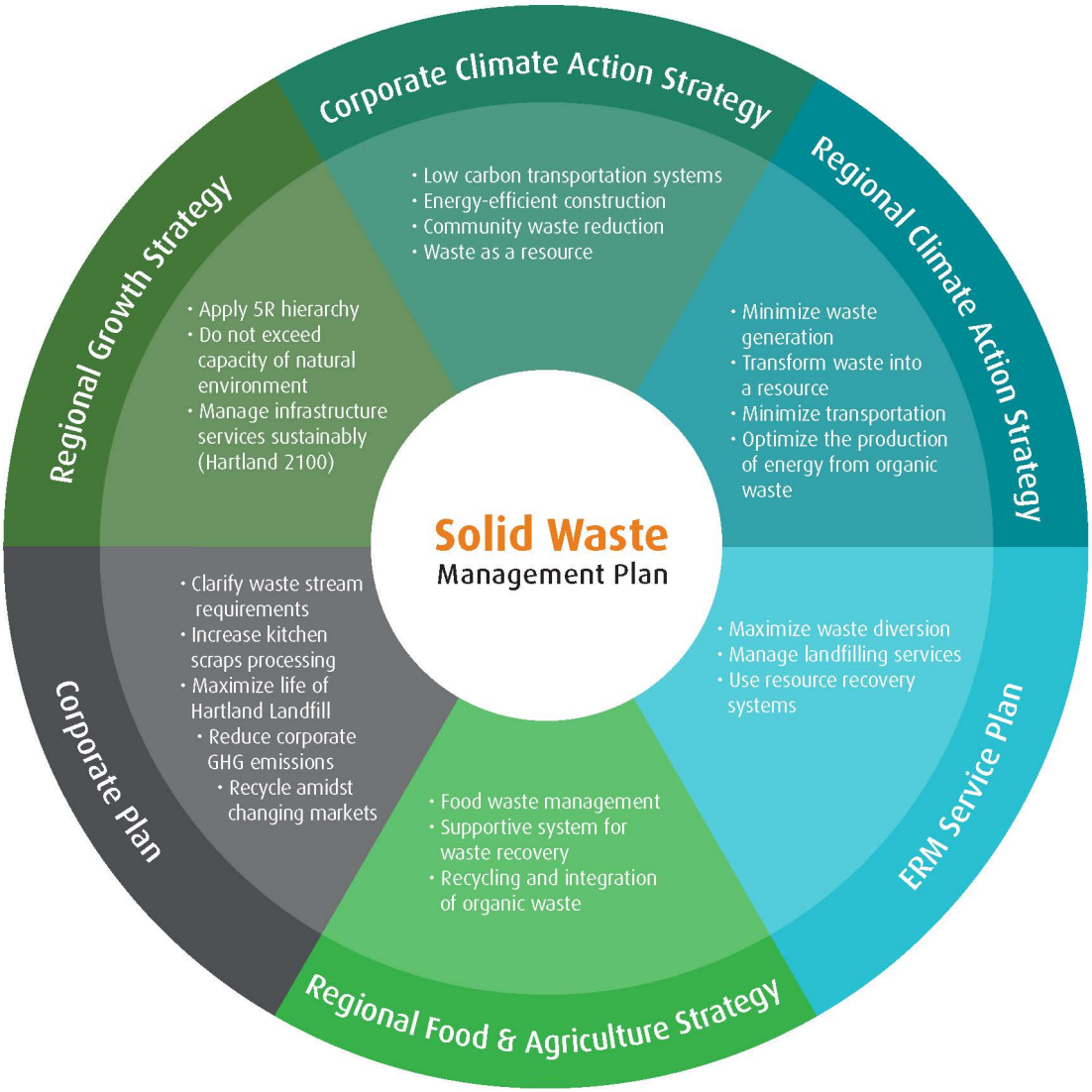


Figure 1-2 Alignment with CRD Strategies and Plans

2 Plan History and Development

The CRD's first SWMP was approved by the Province in 1989. It was updated in 1991, and again in 1995. Since 1995, eight amendments have been added to the Plan and most of the original goals have been achieved. The eight amendments are listed in Table 2-1.

Table 2-1: Plan Amendments

Amendment 1 (2005)
To allow the Capital Regional District (CRD) to regulate composting in the CRD through the adoption of a regulatory bylaw under Section 25 (3) of the *Environmental Management Act.*
Amendment 2 (2001)
To allow the Capital Regional District (CRD) to regulate transfer stations on Salt Spring Island through the adoption of a regulatory bylaw.
Amendment 3 (2004)
To modify the legal description of Hartland Landfill to include additional land that was acquired as a buffer strip.
Amendment 4 (2004)
Add a new Section 16.0 that outlines the CRD's public review process for solid waste related matters.
Amendment 5 (2004)
Establishes procedures for resolving conflicts associated with the Hartland Landfill.
Amendment 6 (2007)
Include the Highwest Waste Management Facility in the SWMP and set operating requirements (replaces Section 10.1.28 in the Plan). This section includes cessation of burning at the site by the end of 2009.
Amendment 7 (2007)
Replace Section 15.1 of the Plan with "Funding for all Hartland Capital Works will be borrowed through loan authorization bylaws or cash flow generated from solid waste operations in accordance with the CRD *Solid Waste Disposal Local Services Establishment Bylaws."*
Amendment 8 (2013)
To allow the siting, construction and operation of a biosolids treatment and resource recovery facility at Hartland Landfill for treatment, processing, storage and beneficial utilization of screenings and waste sludge.

2.1 Process to Update the Plan

In March 2011, the CRD Board passed a motion to undertake a process to update the CRD's 1995 SWMP. In 2012, the CRD embarked on the process to create a new plan that would reflect the changes that have been made since 1995, including the eight plan amendments and changes to the solid waste management system, such as the significant expansion of Extended Producer Responsibility as a means of managing solid waste. Updating the Plan would also allow for consideration of future options for solid waste management in the CRD within the current context and to create an updated vision.

In 2012, a Public and Technical Advisory Committee was formed to provide input into the development of an updated plan. This committee reviewed several reports prepared by consultants, including a 2012 Existing System Report and technical memorandum outlining options for consideration in the new plan.

The planning process, however, was put on hold in 2015 to investigate integrated resource management opportunities. In November 2017, the Board approved restarting the process to update the SWMP.

The process to update the SWMP was restarted in 2018, with the preparation of an updated Existing System report and the establishment of new multi-stakeholder committee, with a mandate of being an advisory committee to the CRD's Environmental Services Committee for the SWMP update process. This new committee is called the Solid Waste Advisory Committee and it also serves as an advisory body on current solid waste management initiatives in the CRD referred to it by the Environmental Services Committee. This committee will also be the Plan Monitoring Advisory Committee upon completion of the SWMP update process. Terms of Reference for the Solid Waste Advisory Committee are included as Schedule A.

The members of the Solid Waste Advisory Committee represent a diversity of backgrounds, interests and geographical locations and includes technical and non-technical members.

Table 2-2: Composition of the Solid Waste Advisory Committee

Representation	Number of Members
Regional district director (member of Environmental Services Committee)	1
Municipal engineering staff who are involved in solid waste collection	2
Electoral Area representative	1
First Nations	2
Environmental organizations	1
Business groups	1
Non-profit group with an interest in solid waste (e.g. reuse organization)	1
Large waste generators (industrial, commercial, institutional)	2
Owners/operators of private waste management facilities	2
Private sector industry collection service providers	2
Composting industry representative	1
Product stewardship agency	1
Community representative (representing Prospect Lake/Hartland area)	1
Public representatives, at large	3
Willis Point community representative	1
District of Highlands representative	1
Solid Waste Technology representative	1

In October 2018, the Board approved the guiding principles, objectives and goals developed by the Solid Waste Advisory Committee for the new plan. In September 2019, the Board reviewed the Solid Waste Advisory Committee's proposed strategies, actions and targets for the updated SWMP, and directed that these be taken out for public consultation.

The first phase of public consultation took place between October 18, 2019 and December 1, 2019, and included a media launch event, public open houses, stakeholder meetings and extensive social media outreach. A dedicated web page was created where people could sign up for project updates, review background information and submit their feedback through a survey. Overall, there was a high level of support for all plan elements. Some actions—particularly those associated with ensuring Hartland Landfill is used as effectively and efficiently as possible—generated important questions from the community.

The results of the consultation and an initial draft Plan were presented to the Solid Waste Advisory Committee in the summer of 2020. As a result of consultation and the Solid Waste Advisory Committee's input, the draft Plan was modified to improve clarity and the waste minimization goal was strengthened, however no changes were made to the draft Plan's strategies and actions.

3 Plan Area

The CRD is the regional government for 13 municipalities and three electoral areas, covering an area of 2,341 sq. km on the southern tip of Vancouver Island. A map showing the administrative boundaries of the CRD is provided in Figure 3-1.

Member municipalities include:

- District of Central Saanich
- City of Colwood
- Town of Esquimalt
- District of Highlands
- City of Langford
- District of Metchosin
- District of North Saanich
- District of Oak Bay
- District of Saanich
- Town of Sidney
- District of Sooke
- City of Victoria
- Town of View Royal

Unincorporated areas are organized into electoral areas. The three electoral areas in the CRD are:

- Salt Spring Island Electoral Area;
- Southern Gulf Islands Electoral Area, which includes Galiano Island, North Pender Island, South Pender Island, Saturna Island, Mayne Island, and smaller islands in the vicinity; and
- Juan de Fuca Electoral Area, which includes the areas of East Sooke, Jordan River, Malahat, Otter Point, Port Renfrew, Shirley, Willis Point, and inland rural areas.

First Nations communities located within the region include: Beecher Bay, Esquimalt, Malahat, Pacheedaht, Pauquachin, Penelakut, Songhees, Tsartlip, Tsawout, Tseycum and T'Sou-ke Bands. Each of these Bands has reserve lands within the boundaries of the CRD as shown in Figure 3-2.

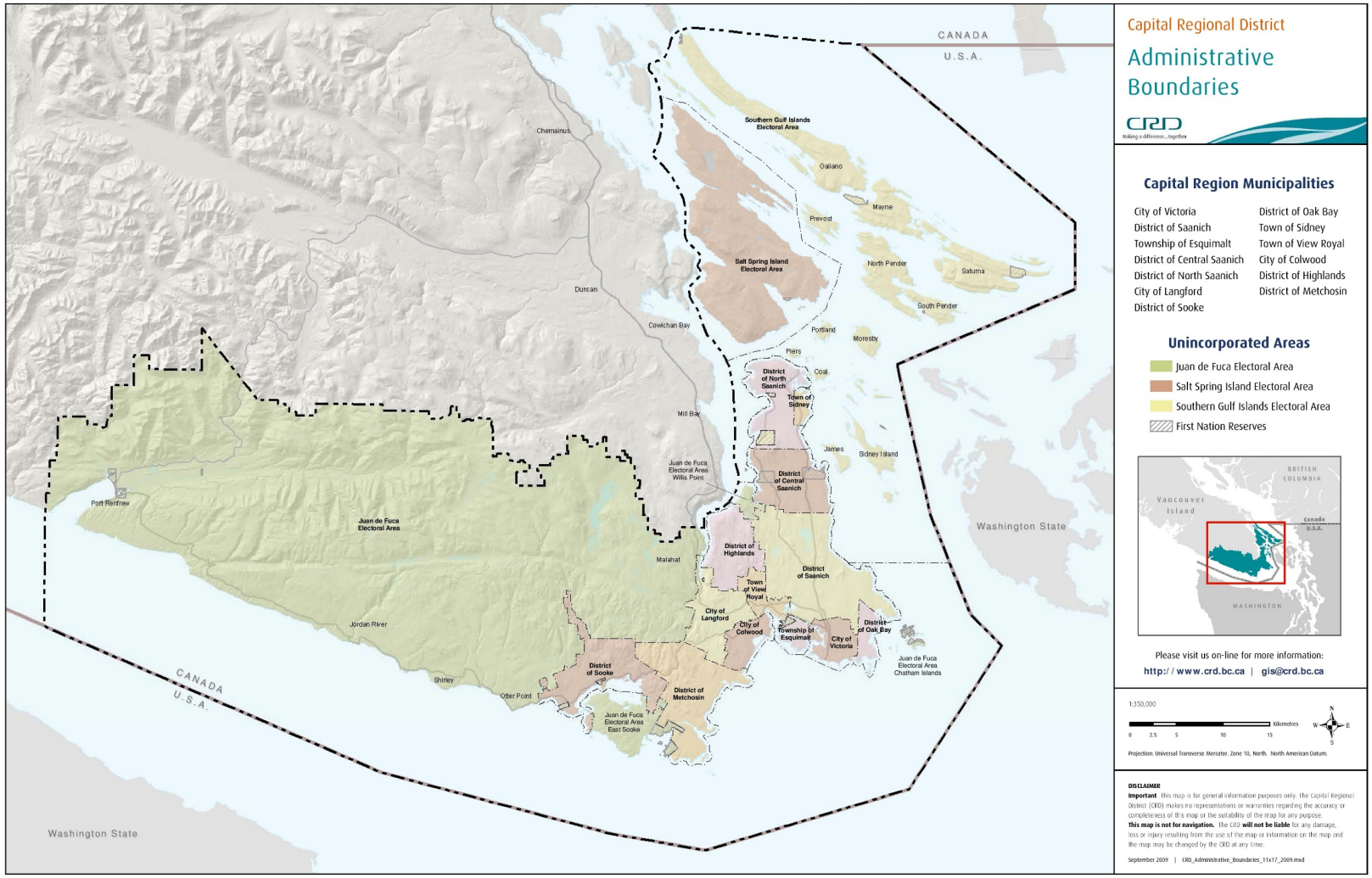


Figure 3-1: Map of Capital Regional District

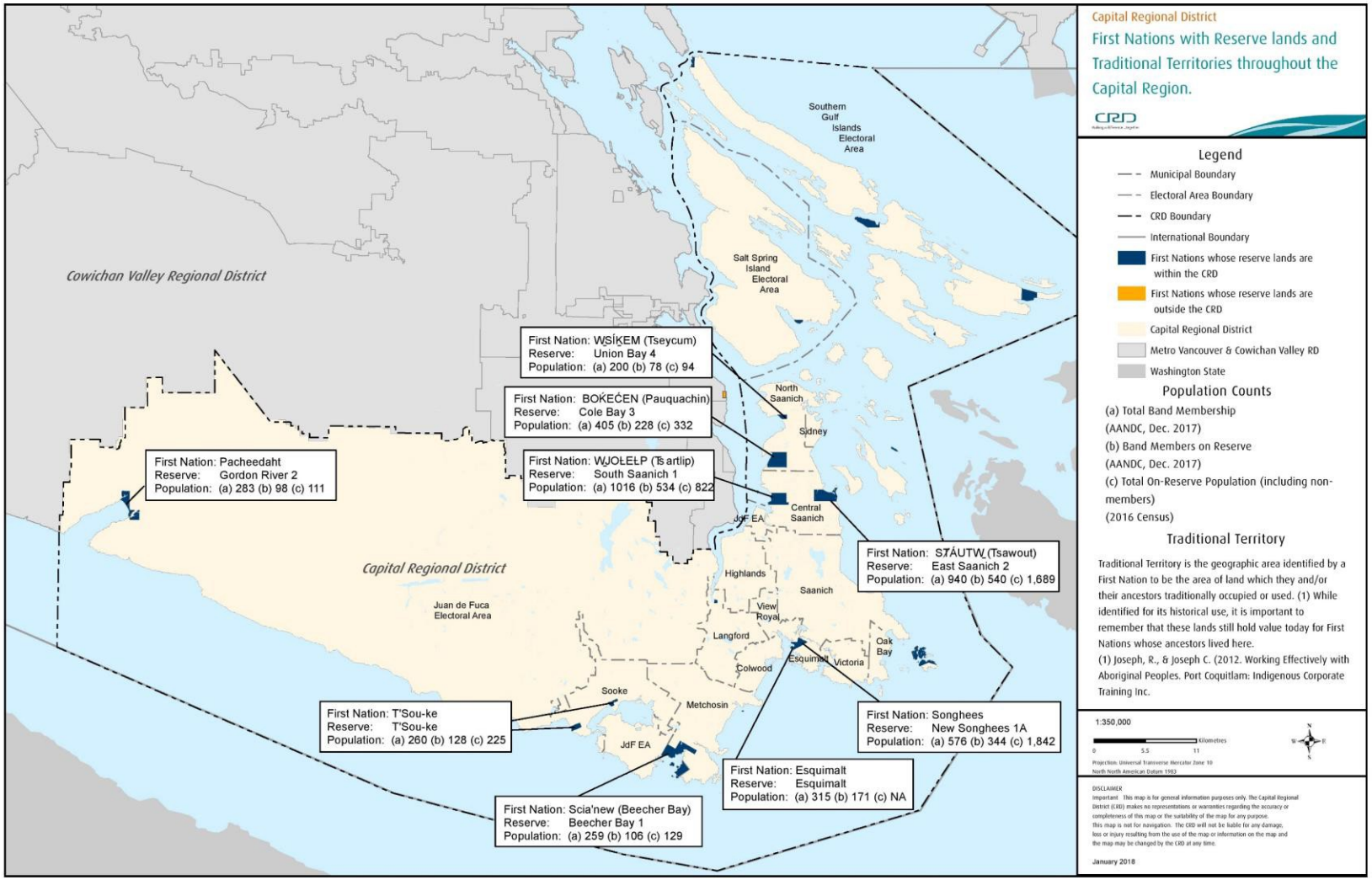


Figure 3-2: First Nations Reserves in the Region

3.1 Population

As shown in Table 3-1, the population of the CRD in 2019 was estimated at 418,414, including persons living on First Nations Reserves. Table 3-2 provides population projections to 2030, as supplied by BC Stats. Based on these estimates, the population of the region is expected to grow by 10% over the next decade

Table 3-1: Population, By Area (2019 estimate)[2]

Area	2017 Population	% of CRD total
CAPITAL REGION	**418,414**	
Central Saanich	18,089	4%
Colwood	18,867	5%
Esquimalt	18,716	4%
Highlands	2,481	1%
Langford	42,653	10%
Metchosin	5,168	1%
North Saanich	11,876	3%
Oak Bay	18,568	4%
Saanich	122,173	29%
Sidney	12,235	3%
Sooke	14,657	4%
Victoria	94,005	22%
View Royal	11,567	3%
Unincorporated Areas		
Juan De Fuca Electoral Area	5,427	1%
Salt Spring Island Electoral Area	11,247	3%
Southern Gulf Islands Electoral Area	5,072	1%
First Nation Reserves	5,613	1%

[2] CRD website: https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/population/population-pdfs/2019_populationestimate.pdf?674c4fcc_2

Table 3-2: Capital Region Population Projections[3]

Year	Population Projection
2020	421,613
2021	426,029
2022	430,530
2023	435,114
2024	439,761
2025	444,330
2026	448,825
2027	453,249
2028	457,563
2029	461,765
2030	465,850

3.2 Housing

Table 3-3 provides a breakdown of the housing types in the region, based on 2016 Census data and building permits for residential structures.

Table 3-3: Housing in the Capital Region[4]

	#	%
Single Detached Houses	70,630	41.5%
Semi Detached Houses (includes flats, duplexes)	32,375	19.0%
Row Houses	10,380	6.1%
Apartments (all types)	54,775	32.2%
Mobile Homes	1,990	1.2%
Total	170,150	100.0

3.3 Economic Data

The CRD has a well-diversified economy. A large public sector comprised of the provincial government offices and military installations as well as universities and colleges are the key drivers of this area's economy.

The area also has a growing technology and health services sector, along with a vibrant tourism industry. Retirement living and residential expansion continue to shape the demographics of this community.

[3] Source: https://www.bcstats.gov.bc.ca/apps/PopulationProjections.aspx

[4] Data provided by the CRD. Does not include housing on First Nation Reserves.

Based on the 2016 census, the main employment sectors in the region are health care (13% of employment), public administration (12%), retail (11%), accommodation and food services (9%), and professional, scientific and technical services (8%).[5]

4 Existing System Overview

The following is a high-level overview of the current system for solid waste management in the region. A more detailed description is provided in the report *Existing Solid Waste Management System (2018)* which can be found on the CRD's website (https://www.crd.bc.ca/docs/default-source/recycling-waste-pdf/2018existingsystemsreport.pdf).

4.1 Disposal Data and Trends

Figure 4-1 shows how per capita disposal in the CRD has changed over the past two decades, incorporating the quantities of waste disposed at Hartland Landfill and the privately owned Highwest Landfill. In 2019, the per capita disposal rate was 382 kg per capita, a reduction of 43% since 1989.

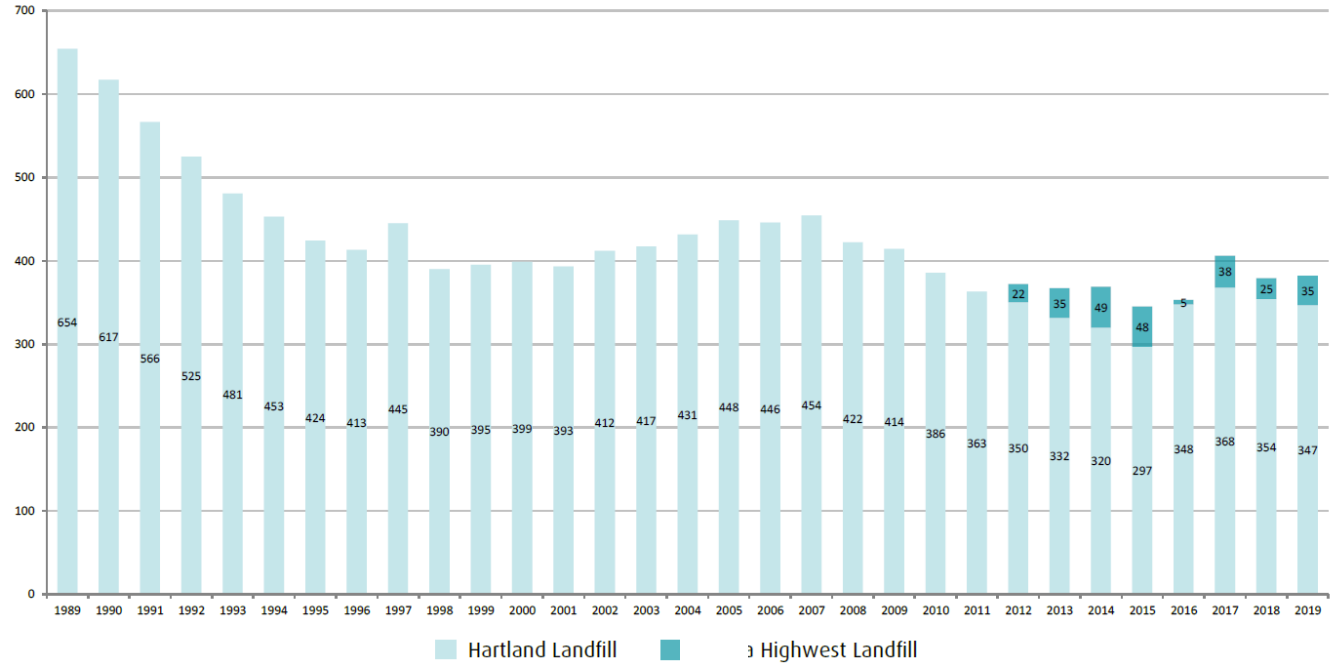


Figure 4-1: CRD Disposal (1989 – 2018)

[5] Source: 2016 Census Profile Statistics Canada

Figure 4-2 shows the estimated composition, by weight, of the waste landfilled at Hartland in 2016 (the last time a waste composition study was conducted at the site). The largest component of the garbage arriving at Hartland Landfill was compostable organics (21.1%), followed by wood and wood products (17.0%), paper (15.4%), and plastic (14.3%).

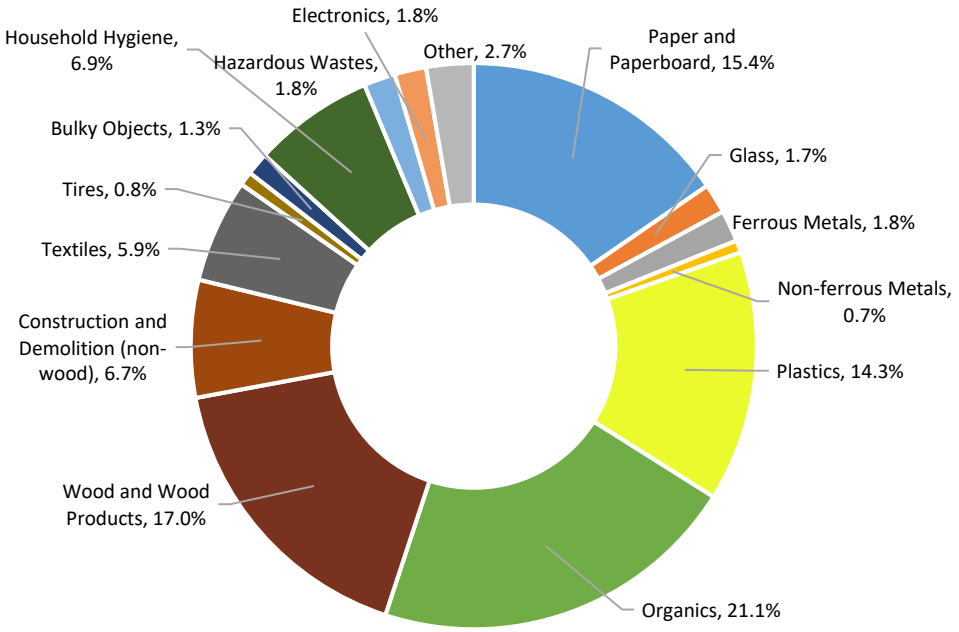


Figure 4-2: Estimated Composition of All Waste Landfilled at Hartland (By Weight), 2016

Figure 4-3 shows the proportion of waste sent to Hartland Landfill in 2019 from each sector. As shown, 41% comes from Industrial/Commercial/Institutional (ICI) activities, while 38% comes from residences (curbside residential plus multi-family).

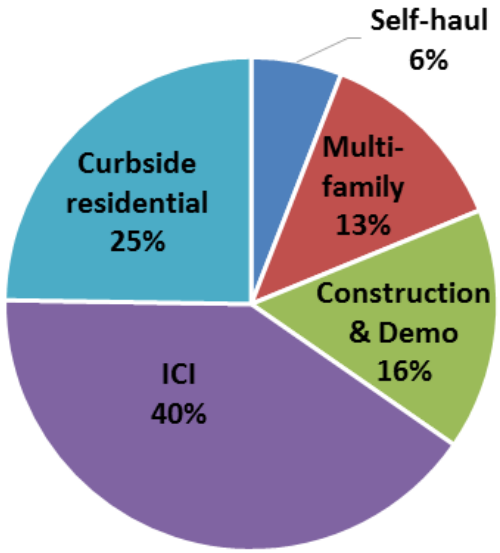


Figure 4-3: Sectors Contributing to Waste Disposed at Hartland (2019)

4.2 Existing System Description

This section provides an overview of the components that currently make up the system for managing solid waste in the region.

4.2.1 Solid Waste Management Facilities

Figure 4-4 is a map showing the location of solid waste management facilities operating in the region as of 2020; including CRD-operated sites (shown in yellow), private waste management operations such as recyclers, recycling depots and transfer stations (in red), non-profit second-hand stores (in green), municipal recycling and yard waste depots (in blue), and Gulf Island recycling depots (in purple).

The region is home to two landfills authorized by the Province of BC: Hartland and Highwest. Both landfills have Operating Certificates issued by the Ministry of Environment that define the activities permitted at these sites. The Highwest Landfill is expected to permanently close in 2021 (see next section for additional details). Additional information on these two facilities can be found in Section 4.3.1.

Future Facilities

This plan anticipates the potential addition of an organic waste processing facility located at the Hartland site. Additional information on this potential facility can be found in Sections 5.2 and 6.

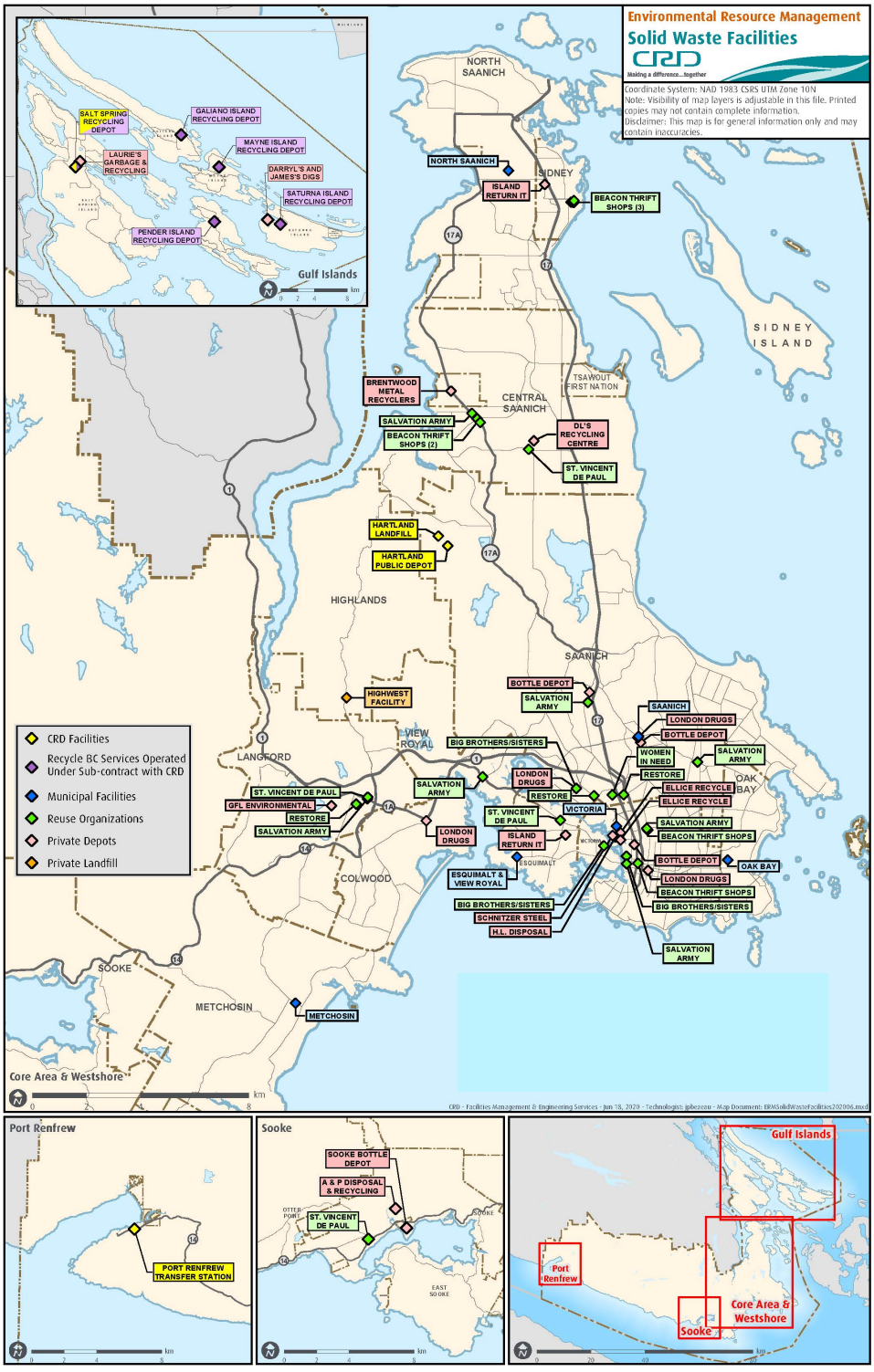


Figure 4-4: Map of Solid Waste Facilities

4.2.2 Solid Waste Disposal

4.2.2.1 Hartland Landfill

The CRD became responsible for solid waste disposal for the region in 1973 when, at the request of the CRD Board, the Province of British Columbia established solid waste disposal as a regional function of the CRD.

In 1975, the CRD acquired the Hartland Landfill site, which had been operating as a private facility since the 1950s. The facility continued to be managed by a private operator under contract to the CRD until 1985, when the CRD assumed direct operation of the site.

Lands surplus to the needs of the landfill operation were subsequently transferred to CRD Parks for public use. This included 210 hectares in 1994, and another 40 hectares in 2003. These areas formed a large portion of the land conserved within Mount Work Regional Park. An additional 29 hectares of land adjacent to the current landfill footprint was temporarily leased to CRD Parks until 2019.

Hartland Landfill is located 14 km northwest of Victoria and is the only sanitary landfill in the capital region. The 125-hectare site is owned by the CRD and operated by a combination of CRD staff and contractors. The landfill is operated under Operational Certificate # PR12659 issued under the Environmental Management Act and follows a detailed Operating Plan based on the Operational Certificate. Figure 4-5 shows the current property boundary of Hartland Landfill. In 2013, the CRD acquired additional land to the east of the site to increase the buffer around the landfill. Additional land acquisitions to further increase the buffer are under consideration and may be acquired during the lifespan of this SWMP. Additional buffer land acquisitions would be consolidated into a single parcel of land. The acquisition of any additional lands are to increase the buffer lands and operational flexibility at Hartland and not to expand the area for landfilling.

In 2013, the Minister of Environment approved Amendment No. 8 of the current SWMP that allows the siting of a biosolids treatment facility at Hartland. A Residuals Treatment Facility has been constructed at Hartland North.

The Hartland Landfill site is a multi-purpose facility that currently includes the following waste management functions:

- Disposal and landfill service for residential and non-residential customers;
- Disposal facility for controlled waste;
- Public drop-off depot for:
    - Recyclable materials;
    - Extended producer responsibility materials
    - Household hazardous waste materials;
    - Reusable goods;
    - Yard and garden material;
- Kitchen scraps transfer station;
- Leachate collection, treatment and disposal;
- Landfill gas collection, processing, conversion utilization and sale;
- Administration and weigh scale facilities; and
- Other solid waste disposal and diversion initiatives as approved by the CRD Board.

Over the years, the CRD has sought to ensure the conservation of landfill space. The practice of banning the disposal of specific wastes at Hartland Landfill when viable recycling alternatives are in place, has been used by the CRD since 1991. Current landfill bans include drywall (implemented in 1991), cardboard, directories, large appliances, tires (1993), scrap metal, fill, aggregate, concrete, asphalt, rubble and clean soil (1995), paper fibres (1998), yard and garden waste (2006), EPR materials (current and future) designated under BC's Recycling Regulation (2011), and kitchen scraps (2015).

The waste diversion and disposal services and policies at Hartland will continue to evolve as needed based on available recycling markets, changes to provincial regulations like BC's Recycling Regulation, and community need.

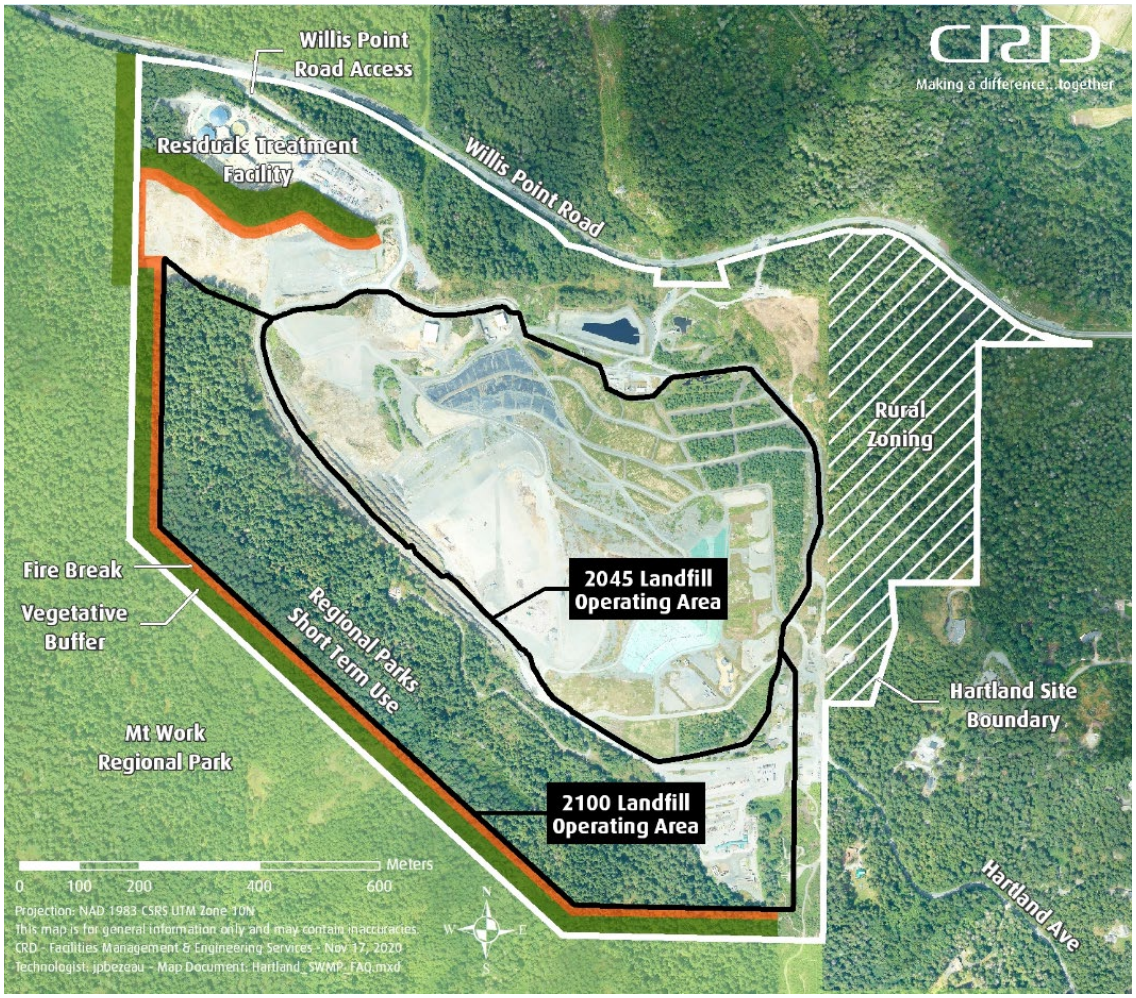


Figure 4-5: Hartland Landfill Boundaries

4.2.2.1.1 Phase 1 and Phase 2 History

Phase 1 is the original part of Hartland Landfill that was completely closed by 1998. This area was filled with approximately 4.5 million cubic metres of garbage. It is permanently covered with a specially designed durable plastic liner and soil cap.

The Final Closure design for Phase 1 was completed in 2010 which included a final cover complete with a new wetland sedimentation pond in addition to gas, leachate and road upgrades. More than 22,000 native trees and bushes have been planted over the Phase 1 area.

Phase 2 refers to the current active filling area which was officially opened on April 30, 1997. It consists of a system of liners, drains and collection pipes to provide for long-term engineered, environmentally secure waste disposal.

Phase 2 is designed to accept approximately 10.3 million cubic metres of solid waste. The most recent final closure was of the north face of Phase 2, Cell 1 in 2011. In 2016, progressive closure of the East and South Faces of Phase 2, Cell 2 was put in place and construction and initial filling of a new landfill cell (Phase 2, Cell 3) began.

4.2.2.1.2 Hartland Landfill Infrastructure

In addition to the landfill itself, the site has other infrastructure that supports its operation. This includes a staffed scale house that weighs all incoming and outgoing vehicles and an automatic scale for account holders. Weighing of vehicles allows the CRD to track the quantity of the waste received at the facility and to charge fees based on the weight of waste deposited at the site. Material collected at the depot and transfer station for subsequent transportation off site is also tracked using the scale system.

Other infrastructure is associated with pollution control and includes leachate and landfill gas management infrastructure, which are described below.

4.2.2.1.3 Gas Management

As garbage decomposes in the landfill, landfill gas is generated. Landfill gas is primarily methane but also includes other organic compounds. Methane is a powerful greenhouse gas – 20 to 30 times more potent than carbon dioxide. To minimize greenhouse gas impacts, reduce odours associated with landfill gas and reduce risk of fires associated with the buildup of methane, active collection and management of the landfill gas is a critical part of managing Hartland Landfill.

Landfill gas has been collected at Hartland for about 20 years. Prior to 2004, the collected gas was flared off and thermally destroyed. Since 2004, the gas is used for generation of electricity and only the excess gas above the generator's capacity is flared. The generator typically produces enough energy to power 1,600 homes annually. In 2013, the CRD purchased their private sector partner's portion of the power project which gives the CRD full control over the landfill gas.

A site specific Landfill Gas Management Plan was approved in 2012 which detailed a strategy for capturing landfill gas and meeting BC Ministry of Environment collection targets. The Plan includes installation, operation and maintenance of collection infrastructure and routine reporting. This has resulted in landfill gas collection increasing by nearly 40% since 2000 and reductions in greenhouse gas emissions by approximately 50% since 2010. Collection infrastructure continues to be installed in accordance with the Landfill Gas Management Plan. Strategy 14 of this plan seeks to optimize and maximise landfill gas collection for beneficial use.

4.2.2.1.4 Leachate Management

Water that has filtered through garbage is called leachate. To minimize the leachate generation area, impermeable covers are installed as cover on the landfill and perimeter ditches are lined to divert more clean surface water away from the landfill. The leachate generated in the landfill is collected, contained and conveyed via a micro-tunnel to two leachate storage lagoons. The leachate is tested on a once-a-month basis and managed through the sanitary sewer system.

4.2.2.1.5 Monitoring

An environmental monitoring, assessment and management program to identify potential impacts of landfill operations on groundwater, surface water and air, is in place in accordance with BC Ministry of Environment requirements. With over 40 years of engineered controls and continuous improvement, groundwater and surface water quality at Hartland Landfill has improved. Monitoring stations include a series of test wells both on and off the landfill site.

The 2016 landfill gas collection efficiencies were within estimated ranges in the Landfill Gas Management Plan, working effectively and reducing greenhouse gas emissions from closed areas of the landfill. New gas wells installed in Phase 2 as part of the long-term gas management plan resulted in gas infrastructure improvements.

The progressive closure of the East and South Faces of Phase 2, Cell 2 that occurred in 2016 significantly reduced the total leachate generation area of the landfill.

The newly constructed Phase 2 Cell 3 area included installation of new leachate containment with gravity flow conveyance piping that discharges into the upper leachate lagoon. Groundwater quality monitoring data obtained in 2016 indicated that landfill leachate is effectively contained and controlled on site.

Leachate quality monitoring, done at the point that it is discharged to the sewer system, confirms that leachate discharged from the site is in compliance with the CRD's Sewer Use Bylaw which regulates discharges to the sanitary sewer. Surface water monitoring in 2016 indicated that nearby surface water bodies are not impacted by leachate.

4.2.2.1.6 Estimated Lifespan

Based on current estimates and assuming no major changes to the volume of waste being disposed of in the near-term, Phase 2 of Hartland Landfill is expected to reach capacity around 2045.

Provincial legislation requires the CRD to provide a safe, secure and sustainable disposal option for regional solid waste in perpetuity. With this responsibility in mind, an additional 29 hectares of landfill property adjacent to the current Phase 2 footprint could be developed to extend the life of Hartland Landfill to 2100 and beyond.

This undeveloped landfill property was temporarily leased to CRD Parks until 2019 and is currently used for recreation by visitors to the adjacent Mount Work Regional Park, including hikers and mountain bikers. When regional demand requires the landfill to develop further, the recreational users of this portion of landfill property will be impacted by the loss of these temporary trails (see section 4.2.2.1.7 for details).

The vision for Hartland 2100 is to keep the landfill's footprint as small as possible. This property will need to be developed for future landfilling starting in approximately 2030 unless significantly more waste is diverted or a new technology for managing waste becomes available and economically feasible for the

CRD. With this planning horizon in mind, development of a Hartland 2100 design concept has been included in this Solid Waste Management Plan in Section 5.3, but its implementation will be phased in over the next 10 years in alignment with evolving regional demand and the landfill's Operational Certificate requirements. CRD staff will review and report out on regional demand as it relates to Hartland Landfill capacity as part of its annual progress report on this solid waste management plan.

Future development of landfill property, including the removal of second-growth trees, would be offset by the reforestation program already in place for all closed areas of the landfill, including 20 acres of reforested land now that will have grown to 50 acres by 2040. The Hartland 2100 design concept will also include a progressive reforestation plan that will reduce the greenhouse gas emissions generated by the landfill through carbon sequestration.

4.2.2.1.7 Community Benefits and Engagement

Based on current population growth and waste trends, the CRD anticipates needing to permanently close the existing biking trails on undeveloped Hartland Landfill property before the landfill reaches capacity in 2045. As CRD staff review and report out on regional demand as it relates to Hartland Landfill capacity and work towards phasing-in implementation of the Hartland 2100 design concept, staff will collaborate with the mountain biking community on alternative options.

There are also residents who live near Hartland Landfill, share the use of transportation routes in the area with landfill-bound traffic and feel impacted by the landfill's location. The CRD endeavours to operate and develop the landfill in a manner that recognizes the interests of the community (recreational and residential), while continuing to provide an essential regional service. The CRD has engaged and will continue to engage with these communities to ensure that their perspectives continue to be understood and that the ongoing development the Hartland site is done with these interests in mind.

4.2.2.2 Highwest Landfill

In addition to the Hartland Landfill, there is the privately owned and operated Highwest Landfill located at 1943 Millstream Road in the District of Highlands. This landfill receives construction and demolition waste and non-hazardous/non-putrescible ICI waste for disposal. This facility is expected to permanently close in 2021 once it reaches capacity. Highwest operates under an Operational Certificate #100193 issued by the Province of BC.

4.2.3 Transfer Stations

The CRD owns and operates a transfer station in Port Renfrew where garbage is received from local residents and transferred to Hartland Landfill. Source separated recyclables and kitchen scraps are also accepted at the site for recycling.

Additionally, there are several private transfer stations in operation in the CRD. Many of these sites offer recycling services as well.

Transfer stations on Salt Spring Island are subject to *Capital Regional District Bylaw 2810, a Bylaw to Regulate the Operation of Transfer Stations on Salt Spring Island* which requires all transfer stations to hold a license. This bylaw was put in place to ensure that all transfer stations on Salt Spring Island are operated at a standard that ensures the protection of environmental and community health.

4.2.4 Solid Waste Collection

Collection of residential and commercial garbage and kitchen scraps is conducted by the private sector, with the exception of single-family dwelling collection service offered by six of the region's municipalities.

The private sector also collects recycling from multi-family buildings, commercial buildings and institutions, and garbage and recycling from construction / demolition sites.

The CRD provides region-wide residential recycling service through a combination of single-family dwelling curbside collection and depot collection programs under contract to Recycle BC.

4.2.5 Streetscape Waste Management

Litter and recycling collection in public spaces such as urban streetscapes is a municipal service, as well as a responsibility of Recycle BC. Streetscape recycling is part of the Recycle BC's EPR program for packaging and printed papers. Encorp also provides streetscape recycling containers for beverage containers.

4.2.6 Reduce and Reuse

There are a broad range of rental and repair services throughout the region plus many opportunities for reuse of goods through private and non-profit retailers, online platforms (e.g. Used Victoria, Kijiji) and informal activities (e.g. garage sales, rummage sales). The CRD supports reuse through two main mechanisms:

- **Diversion Funding for Non-Profit Organizations**: Since 1992, the CRD has provided funding to non-profit organizations involved in recycling clothing and used household goods. The funding assists with their garbage disposal costs at Hartland, in recognition that some donated used goods are unusable and destined for the landfill. Ten organizations participated in the program in 2019.

- **Hartland Reusable Materials Program**: The CRD partners with five organizations for the management of donated items received in the Hartland depot. Goods such as textiles, household items, some building materials and bicycles are redistributed through a variety of networks operated by these non-profit associations.

4.2.7 Communications, Outreach and Education Programs

Environmental education is of paramount importance to the CRD's waste reduction strategies. The CRD provides a number of communications, education and outreach programs to support the 5R hierarchy and promote resident awareness and participation in waste reduction and disposal services, including:

- **School Outreach Programs:** Curriculum-linked educational workshops and tours for students from Kindergarten to Grade 12.

- **The Hartland Learning Centre**: Located at Hartland Landfill, this recycled building is the venue for school and community workshops, as well as the starting point for tours. Tours are provided to school groups, community groups, members of the public and technical groups.

- **Community Outreach and Events:** Displays are set up at fairs, festivals, community gatherings and other community events or locations. The displays often focus on ways to reduce and divert waste,

proper sorting techniques for recyclable materials or more specific topics such as how to prepare demolition waste and dispose of asbestos.

- **MyRecyclopedia.ca:** A comprehensive online listing of items including local recycling listings and tips on how to reduce and reuse.

- **Infoline**: This dedicated phone line and email address allows the CRD to respond to inquiries about waste reduction, waste management, recycling and Hartland Landfill.

- **Ready, Set, Sort!:** An online waste sorting game where residents can test their knowledge about local recycling opportunities.

- **CRD website**: The CRD's website has a range of information associated with the 5Rs and CRD's solid waste services.

- **Compost Education Centre:** Through a contract with the CRD, the centre offers organic waste diversion presentations, workshops, and educational demonstrations at on-site gardens and throughout the community.

- **Public Education Campaigns:** The CRD develops and implements a number of seasonal, multi-media public education campaigns to promote and provide information on a range of waste management subjects. In 2019, those subjects included:

    - end markets for recyclable materials
    - household hazardous waste
    - safe renovation waste disposal
    - avoidable food waste reduction
    - illegal dumping prevention
    - holiday season waste reduction
    - abandoned boat reporting and prevention

In addition to the above activities undertaken by the CRD, municipalities with waste management services, waste management companies, EPR organizations and many environment-oriented non-profit organizations provide their own communication and education services.

4.2.8 Recycling Depots

There are public and privately operated depots located throughout the region accepting recyclables of many types, kitchen scraps, yard waste, EPR products, and household hazardous waste. Some of these depots also receive garbage.

The public drop-off depot at Hartland receives garbage, reusable goods, recyclables and household hazardous waste. This area is intended for residential quantities and limits vehicle size to 5,500 kg gross vehicle weight.

Residents on Salt Spring Island and the Southern Gulf Islands are provided recycling services through drop-off programs set up at depots in their communities. The CRD, under agreement with Recycle BC, partners with local on-island non-profit associations for recycling services for residential packaging and paper products at these depots. In addition to receiving packaging and paper products, most depots offer additional services such as scrap metal, electronics recycling and other recycling.

4.2.9 Extended Producer Responsibility

British Columbia's industry-led product stewardship programs require producers of designated products to take extended producer responsibility for the life-cycle management of their products, including collection and recycling.

The BC Recycling Regulation, under authority of the Environmental Management Act, sets out the requirements for product stewardship in BC. The region is served by all of BC's EPR programs through a broad range of take-back programs and service providers, including depots and retailers. The CRD participates directly in EPR by acting as a collector for the following EPR programs at Hartland depot:

- Beverage Containers
- Electronics, Electrical Products, Batteries, Smoke Detectors and Lighting Products
- Lead-Acid Batteries
- Paints, Solvents, Flammable Liquids, Gasoline and Pesticides
- Residential Packaging and Paper Products
- Tires
- Used Lubricating Oil, Filters and Containers and Antifreeze

4.2.10 Household Hazardous Waste Management

Most household hazardous waste in the CRD is collected through EPR programs, including those provided at the Hartland depot.

Since not all HHW is currently covered by EPR programs, the CRD accepts both EPR and non-EPR household hazardous waste materials at the Hartland depot. This program will remain available as long as there is a need for the service.

The CRD will continue to encourage the province to expand the list of household hazardous waste products covered by EPR so that the cost of managing all household hazardous waste is ultimately borne by the producers and consumers of these products.

4.2.11 Organics Management

Regional Kitchen Scraps Strategy

In January 2015, a landfill ban on kitchen scraps was implemented, saving a valuable resource, conserving landfill space and reducing greenhouse gas emissions from Hartland Landfill. Collected kitchen scraps are currently processed at composting facilities in outside of the capital region.

Compost Facilities Bylaw

The CRD Board adopted the regional composting bylaw in December 2005. The bylaw regulates the operation of composting facilities in the region to protect public health and the environment. In 2019, there were no facilities licensed under the bylaw in the region.

Yard and Garden Material Landfill Restriction

In 2006, a yard and garden material landfill ban came into effect. A number of private facilities in the area accept the region's yard and garden material.

In 2019, 1,142 tonnes of source-separated yard and garden material was received at Hartland where it was ground and beneficially used on-site. The landfill ban excludes invasive, infectious and noxious plants

which are received at Hartland as garbage or controlled waste at a discounted tipping fee in an effort to reduce their proliferation.

4.2.12 Illegal Dumping Mitigation

The CRD's aims to mitigate illegal dumping through the following on-going measures:

- Communication campaigns that target specific illegal dumping behaviours;
- Funding to non-profit associations to conduct clean-up events in public places;
- Funding for the removal of abandoned boats and marine debris;
- Support of non-profit organizations involved in recycling clothing and used household goods;
- Funding towards the disposal and recycling of unusable materials received as donations;
- Provision of safe disposal of abandoned hazardous materials; and
- A web page on illegal dumping on the CRD website that provides information on how to reduce illegal dumping and abandonment.

4.2.13 Participants in the Solid Waste Management System

There are many participants in the solid waste management system, as described in Table 4-1.

Table 4-1: Participants in the Solid Waste Management System

Who	Roles in Solid Waste Management
BC Ministry of Environment	• Regulates municipal solid waste management through the Environmental Management Act • Establishes provincial targets for management of solid waste in B.C. • Approves regional solid waste management plans • Authorizes discharges to the environment through permits and operational certificates • Enforces provincial regulations and the conditions set out in discharge permits and operational certificates • Mandates EPR in BC through the Recycling Regulation
Capital Regional District	• Operates the Hartland Landfill site and the Port Renfrew transfer station • Provides residential recycling services through a combination of curbside and depot collection (through a contract with Recycle BC) • Prepares the regional solid waste management plan (SWMP) • Works with municipalities and First Nations to implement the SWMP • Regulates the operation of composting facilities through the Compost Facility Bylaw • Regulates the operation of transfer stations on Salt Spring Island through the Salt Spring Island Transfer Station Bylaw • Reports annual MSW disposal rate to ministry • Provides education and outreach • Monitors the implementation of the SWMP through the Solid Waste Advisory Committee
Municipalities	• May provide various curbside collection or drop-off services to residents • Litter collection, streetscape sanitation and waste collection services for public spaces • Provides education and outreach associated with local solid waste services • Municipal waste management planning, which may include zero waste planning • Liaises with the regional district with regards to solid waste services and issues • Participates in the development and implementation of the SWMP • May undertake local zero waste initiatives • Provides land use zoning approval for a variety of solid waste and recycling facilities in their municipality

Who	Roles in Solid Waste Management
First Nations	• May provide curbside collection of garbage and kitchen scraps to residents • Provides education and outreach associated with the local solid waste services • Liaises with the regional district on items of mutual interest • May participate in the development and implementation of the SWMP
Producer Responsibility Organizations	• Provides collection services for stewarded products • Provides education/promotion to increase product recovery • Provides deposit refunds to consumers (where applicable) • Monitors and reports on diversion/recovery rates to the Province • Participates in the development and implementation of the SWMP
Private sector involved in waste management (e.g., haulers, facility operators)	• Provides garbage and recycling collection services to municipalities, businesses, residents, institutions, and construction/ demolition projects • May operate private facilities such as bottle depots, recycling depots, transfer stations and composting facilities • May be regulated by Provincial government • Liaises with waste generators (customers) to minimize contamination of waste streams • Complies with CRD requirements for source separation of controlled waste • Participates in the development and implementation of the SWMP
Waste generators (residents and businesses)	• Participates in municipal and regional solid waste management programs and services • Is informed regarding source separation requirements, disposal restrictions and options to minimize waste sent to disposal
Non-profit organizations	• Provide recycling depot services on Salt Spring and the Southern Gulf Islands • Receive reusable goods for sale in thrift stores and distribution in social support programs

4.2.14 Bylaws

The CRD has the following bylaws in place for the purposes of managing solid waste:

Bylaw 1903, Solid Waste Disposal Local Service Establishment Bylaw No. 1, 1991 establishes a local service to allow the CRD to acquire, construct, establish, maintain, operate and regulate:

(a) transfer depots and facilities for receiving collected waste for packing, processing, loading and transporting the waste to disposal grounds;
(b) facilities for collecting, processing, storing, marketing and disposing of recyclable waste;
(c) facilities for composting waste;
(d) facilities for collection, storage and disposal of hazardous, biomedical or special waste;
(e) facilities for carrying out resource recovery from waste; and
(f) waste disposal grounds and facilities.

The above bylaw has been amended twice since 1991:

- **Bylaw 2564 To Amend Bylaw No. 1903 "Solid Waste Disposal Local Service Establishment Bylaw No. 1, 1991"** to establish the service of the regulation, storage and management of municipal solid waste and recyclable material, including the regulation of facilities and commercial vehicles used in relation to these matters
- **Bylaw 3900 To Amend Bylaw 1903 "Solid Waste Disposal Local Service Establishment Bylaw No. 1, 1991"** to include facilities for carrying out resource recovery from recyclable material, and the generation of energy from landfill gas.

Bylaw 3881, The Hartland Landfill Tipping Fee and Regulation Bylaw lists items that are banned from disposal at Hartland Landfill and established tipping fees for garbage and recyclables.

Bylaw 2810, a Bylaw to Regulate the Operation of Transfer Stations on Salt Spring Island requires all transfer stations on Salt Spring Island to hold a license. This bylaw was put in place to ensure that all transfer stations on the island are operated at a level that ensures the protection of environmental and community health.

Bylaw 2736, a Bylaw to Regulate the Operation of Composting Facilities ensures that composting operations do not contaminate ground or surface water, or generate unacceptable levels of nuisance odour, vectors, litter or dust, and to protect the public from composting operations which violate the requirements of the bylaw. The CRD bylaw supplements existing provincial regulations under the Organic Matter Recycling Regulation.

The bylaw sets out four classes of licenses, as follows:

- Class 1: composting general organic matter on an impermeable surface or in-vessel (this type of facility is exempt from licensing unless the facility generates leachate or creates nuisance odours, vectors, litter or dust).
- Class 2: composting biosolids with general organic matter on an impermeable surface or in-vessel.
- Class 3: composting restricted organic matter.
- Provisional: operations not using proven technology to compost restricted organic matter.

Bylaw 2290, **a Bylaw for the purpose of establishing regulations for the use of recycling containers and the collection of recyclable material** within the Capital Regional District.

In addition to the above, municipalities may have bylaw provisions associated with the waste management services they provide, in addition to littering, open burning, zero waste, and the location of waste management facilities.

5 Strategies and Actions

This section outlines the strategies to be implemented to achieve the Plan's goals and the specific actions to be undertaken as part of each strategy. Figure 5-1 provides a graphical summary of the four goals of this plan and the associated strategies.

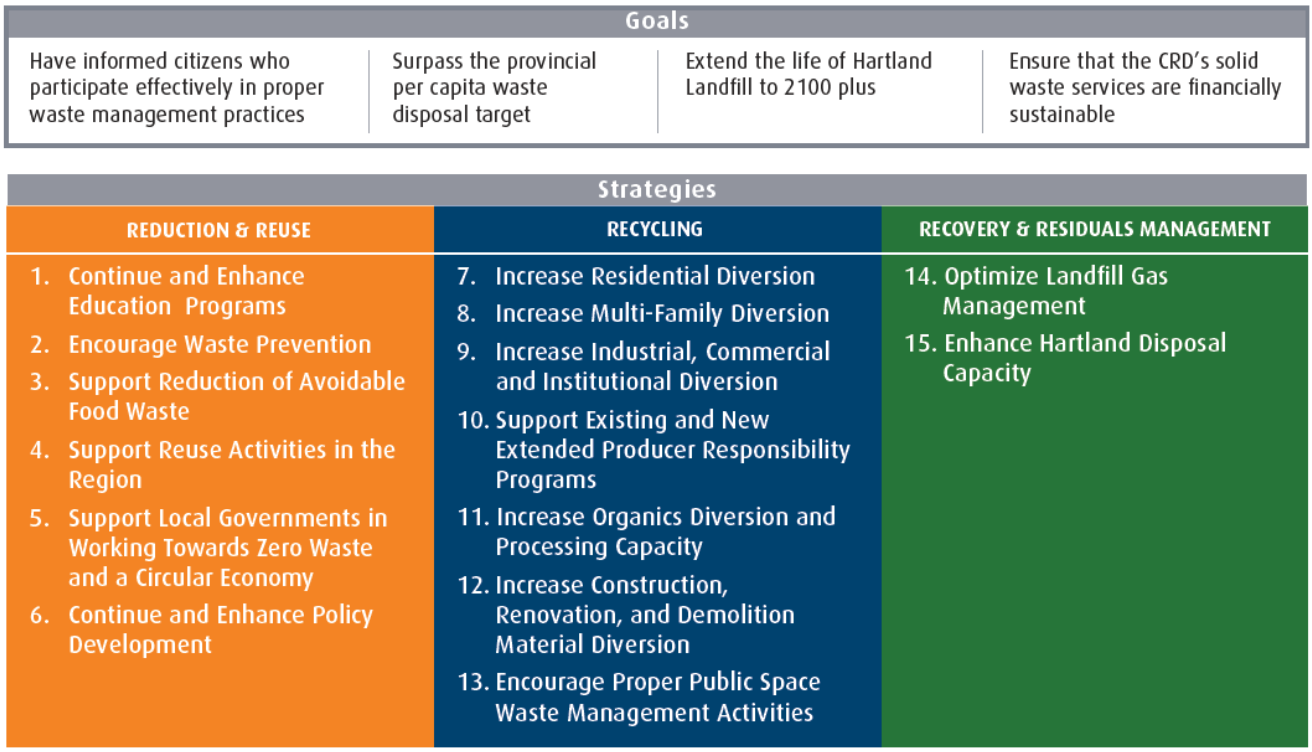


Figure 5-1: Plan Goals and Strategies

The selection of the plan's strategies and actions were based on feedback from the Solid Waste Advisory Committee and an evaluation of each strategy for:

- Technical Feasibility and Effectiveness;
- Environmental Impact and Benefits;
- Social Impact;
- Effect on Waste Disposal, and
- Cost Considerations.

These actions are deliberately broad in scope to enable a wide range of current, emerging and future activities related to each program area. This Plan is intended as a guiding document and does not encompass operational details or articulate every ongoing program or activity undertaken by the CRD. The guiding principles, goals, targets and strategies outlined in this Plan provide the policy framework to guide CRD's programming around solid waste. Activity progress will be reported annually through a detailed plan monitoring report.

Implementation of the actions outlined in this plan will require collaboration with many participants in the solid waste system.

This Plan does not preclude municipalities, First Nations, local businesses, institutions or non-profit organizations of undertaking their own initiatives, except for where those initiatives require inclusion in the regional Plan

5.1 Reduction and Reuse

Strategy #1: Continue and Enhance Education Programs

Actions:

A. Ensure ongoing, up-to-date promotion and education resources to enable effective participation in CRD programs and initiatives.
B. Incorporate behaviour change components wherever possible; using a variety of education and communication strategies and tools.
C. Expand and prioritize education programs for the multi-family and ICI sectors.
D. Enhance K-12 school program to include concepts of zero waste and the circular economy.
E. Collaborate with stakeholders on education campaigns (in partnership with First Nations communities, municipalities and product stewards).
F. Continue supporting environmental stewardship recognition.
G. Continue to engage residents on solid waste matters using the appropriate level of consultation.

Strategy #2: Encourage Waste Prevention

Actions:

A. Promote less consumption and advocate for consumer responsibility.
B. Establish a community-based waste reduction grant program.
C. Support municipal, provincial and federal single-use item reduction efforts.
D. Promote sustainable and/or packaging-free purchasing options.
E. Advocate provincially and federally to limit or eliminate the manufacturing, distribution and/or sale of single use items and non-recyclable materials.
F. Advocate provincially and federally for sustainable product and packaging design.

Strategy #3: Support Reduction of Avoidable Food Waste

Actions:

A. Continue to support residential food waste reduction through education campaigns and composting promotion.
B. Continue to encourage the donation of edible food and support food recovery organizations.
C. Advocate for regulations that support avoiding food waste.

Strategy #4: Support Reuse Activities in the Region

Actions:

A. Continue to provide funding for non-profit reuse organizations to help offset costs for managing unusable donated items.
B. Continue to support and promote donations to reuse establishments.
C. Support reuse, renting and sharing programs (e.g. tool libraries, repair cafes and centres, sewing hubs, etc.) and other materials exchange activities.
D. Investigate the possibility of a free store at Hartland or other facilities.

Strategy #5: Support Local Governments in Working towards Zero Waste and a Circular Economy

Actions:

A. Develop model language for bylaws, best practices, official community plans, and economic development strategies for use by local governments using research and collaboration to guide this process (in partnership with municipalities and potentially other regional districts).
B. Work with local governments to identify the need for solid waste facilities and zoning for waste management activities. To be done in partnership with member municipalities.
C. Use policy tools to enable local recycling infrastructure.
D. Investigate 'pay-as-you-throw' principles to use as tools to incent less waste disposal.
E. Investigate use of clear bags for garbage or recyclables collection to encourage proper recycling of materials, where practicable and enforceable (e.g. at events).

Strategy #6: Continue and Enhance Policy Development

Actions:

A. Develop model procurement policies for use by local governments, non-profits, etc. To be done in partnership with member municipalities and other interested organizations.
B. Continue to expand material bans when viable alternatives exist.
C. Investigate licensing waste management facilities in the region to encourage transparency, consistency, and a requirement that all facilities protect public health and the environment.
D. Investigate regulatory mechanisms to manage municipal solid waste and recyclable materials in the region.
E. Investigate options for managing debris from extreme weather (e.g. community chipping days, special burning allowances in electoral areas).

5.2 Recycling

Strategy # 7: Increase Residential Diversion

Actions:

A. Continue to promote residential diversion of recyclable materials (including organics), ensuring that education campaigns strive to minimize contamination in these streams.
B. Collaborate with municipal and private sector service providers to support depot diversion efforts in the region for non-curbside materials.
C. Encourage local processing and markets for residential recyclables.
D. Develop tools, such as a guide, to support event recycling.

Strategy # 8: Increase Multi-Family Diversion

Actions:

A. Allocate resources to support multi-family recycling, for example, by developing standardized education materials.
B. Work with local governments and private sector service providers to develop multi-family waste source separation requirements.
C. Develop policy guide and recommendations for recycling, composting and garbage space and access in multi-family developments.
D. Collaborate with stakeholders (e.g., private haulers who service multi-family buildings or multi-family property managers) to implement support for multi-family recycling.

Strategy # 9: Increase Industrial, Commercial and Institutional Diversion

Actions:

A. Allocate resources to increase ICI diversion, for example, a business waste reduction liaison.
B. Advocate to expand the packaging and paper product EPR program to the ICI sector.
C. Create a business waste reduction toolkit, including education about how to apply circular economy principles.
D. Encourage municipalities to require waste management plans with business licenses.
E. Develop policy guide for ICI waste management space and access requirements.
F. Work with local governments and private sector service providers to develop ICI waste source separation requirements.
G. Investigate shifting disposal ban enforcement to the ICI generator, rather than hauler.

Strategy #10: Support Existing and New Extended Producer Responsibility Programs

Actions:

A. Advocate to the province to expand EPR programs.
B. Collaborate with stewards to increase consumer awareness about EPR programs.
C. Advocate for increased return-to-retailer opportunities.
D. Advocate federally to standardize EPR programs across Canada.

Strategy #11: Increase Organics Diversion and Processing Capacity

Actions:

A. Continue to promote organics waste material diversion.
B. Continue to utilize and monitor existing private sector organics processing capacity and seek to develop a facility at the Hartland Landfill site in the future should needed processing capacity not be found to be sufficiently available to meet the region's requirements. (Additional information on the process to develop this facility is in Section 6).
C. Support compost markets by purchasing back materials.
D. Collaborate with service providers and users (e.g., local businesses) to develop guidelines for use of compostable products and packaging.

Strategy #12: Increase Construction, Renovation and Demolition (CR&D) Material Diversion

Actions:

A. Develop a comprehensive CR&D strategy, including characterization of materials, best practices, and pilot projects.
B. Develop educational tools to support CR&D material diversion (e.g. create an industry toolkit, a deconstruction guide, and/or guidelines for diverting and utilizing reused materials).
C. Promote green building standards.
D. Continue collaboration with local governments to develop and use policy tools (e.g., construction permits, building codes) to maximize diversion and to align management plans.
E. Investigate beneficial uses of CR&D waste, including a clean wood waste landfill ban.
F. Investigate banning or surcharging mixed CR&D loads at the landfill to encourage source separation
G. Further develop programs for managing hazardous materials(e.g. asbestos)

Strategy #13: Encourage Proper Public Space Waste Management Activities

Actions:

A. Develop educational materials to prevent and reduce litter and abandoned materials in our neighbourhoods and public spaces.
B. Continue promoting alternatives to abandoned materials and illegal dumping by educating about proper management and disposal
C. Collaborate with stakeholders, including local governments and private sector facilities, to develop a regional approach to prevention of illegal dumping.
D. Investigate developing regionally-aligned litter bylaws. To be done in partnership with member municipalities.
E. Develop and pilot methodologies to 'observe, record, and report' on abandoned materials and illegal dumping incidents throughout the region.
F. Investigate options for large bulky item disposal, e.g., free drop-off days or large item pick-up days

5.3 Recovery and Residuals Management

Strategy #14: Optimize Landfill Gas Management

Actions:

A. Continue to maximize and optimize the capture of landfill gas for beneficial use.[6]
B. Investigate collaboration opportunities with educational institutions to research new beneficial uses and technologies.

Strategy #15: Enhance Hartland Disposal Capacity

Actions:

A. Review Hartland tipping fee structure and ban enforcement levels, subject to recycling market conditions
B. Continue to operate Hartland Landfill using best practices.
C. Develop design options that maximize the disposal capacity of Hartland Landfill to 2100 and beyond. (Note: See section 4.2.2.1.6 for details. Design and aggregate management options could extend landfill life significantly.)
D. Continue to conduct research, investigate and report out on emerging waste management technologies (including alternatives to landfilling such as integrated resource management and gasification).

[6] On April 22, 2020, the CRD announced approval in principle of an agreement where FortisBC will purchase renewable natural gas (RNG) generated from Hartland Landfill for beneficial use in its natural gas distribution system. The CRD and FortisBC are currently working together on a supply contract that will be submitted to the British Columbia Utilities Commission for approval. If approved by the commission, the CRD will continue to be responsible for the ownership and operation of the Hartland Landfill, the landfill gas collection system and the upgrade facility. The project is expected to reduce the region's greenhouse gas emissions by approximately 264,000 tonnes of carbon dioxide equivalent over the 25-year project life.

6 Organic Processing Facility Decision Process

Strategy #11 includes an action to continue to utilize and monitor existing private sector organics processing capacity, and seek to develop a facility at the Hartland site in the future should needed processing capacity not be found to be sufficiently available to meet the region's needs. This section provides additional detail on the history of organic material management and potential future management options.

The CRD implemented a kitchen scraps disposal ban at Hartland Landfill in 2015. In recognition of a lack of sufficient local processing capacity, the CRD expanded the kitchen scraps transfer area at Hartland to receive additional volumes of kitchen scraps collected within the region. Kitchen scraps are received from municipal and private sector split packer and single stream collection vehicles, loaded for efficient transport and hauled for processing at facilities on southern Vancouver Island.

The CRD intends to continue to provide the community with receiving and transport services for kitchen scraps through the transfer facility at Hartland while monitoring in-region and on-island processing capacity.

In response to a need to secure additional processing capacity for the community, a facility at Hartland may also be pursued in an effort to reduce the greenhouse gas emissions associated with the current transportation and processing model.

7 Implementation Schedule

In the short-term (the first 3 years of the plan's implementation), the focus will be on the actions that target the reduction and diversion of CR&D waste and organic materials. Also in the short-term, the actions associated single-family, multi-family, and ICI diversion will be implemented.

In the medium-term (4-5 years), the focus will be on continuing and improving the single-family, multi-family, and ICI programs.

In the long-term (full plan implementation), all programs will be refined to maintain and/or improve diversion levels. Additionally, new EPR programs are anticipated to be implemented within the timeframe of this plan; in particular the Plan anticipates the introduction of EPR for ICI-generated paper and packaging and textiles.

Schedule C provides a detailed planned implementation schedule for the Solid Waste Management Plan from 2021 to 2030.

8 Plan Targets

The targets established for this plan are focused on reducing the amount of waste landfilled on a per capita basis. The CRD has set a goal of exceeding the provincial target for per capita waste disposal. At the time of preparing this plan, the provincial target is 350 kg per capita. The per capita disposal targets proposed for the CRD are based on the strategies and actions described in Section 5 and are presented below in Table 8-1.

Table 8-1: Plan Targets

	Short-Term Goal (3 years)	Medium-Term Goal (5 years)	Long-Term Goal (10+ years)
Targeted Sectors/ Materials	▪ Construction, Renovation, and Demolition waste ▪ Organic waste from: • Single-family • Multi-family • Industrial, Commercial and Institutional	▪ Recyclables and organic waste from: ▪ Single-family ▪ Multi-family ▪ Industrial, Commercial and Institutional	▪ Extended producer responsibility for Industrial, commercial and institutional - generated paper and packaging and textiles ▪ Refine programs to increase performance for all sectors
Disposal Target (kg per capita)	**340**[1]	**285**	**250**[2]

1. This target is aggressive and assumes that disposal bans for CR&D materials would be implemented.
2. This target is aggressive and assumes that new EPR programs will be implemented by the Ministry in the long-term timeframe.

9 Financing

The strategies and actions outlined in this Solid Waste Management Plan are intended to decrease community waste generation from 380kg per capita down to 250kg per capita over the 10 year planning horizon.

In 2019, all costs associated with solid waste disposal and diversion programs in the CRD were funded through tipping and user fee revenues at Hartland Landfill, collection contract revenues, sale of electricity and sale of recyclables. The costs of the CRD's solid waste services, including the funding of reserves, was $27,646,550.

The annual incremental cost to deliver the strategies and actions identified in the Solid Waste Management Plan is $320,000 to $345,000 per year as shown in Table 9-1. This is an increase of approximately 1% per year.

Table 9-1: New Costs Associated with Solid Waste Management Plan Strategies and Actions

Strategy		**Annual Cost**
1	Continue and Enhance Education Programs	$100,000
2	Encourage Waste Prevention	$50,000
7	Increase Residential Diversion	$25,000 (for 2 years)
8	Increase Multi- Family Diversion	$50,000
9	Increase Industrial, Commercial and Institutional Diversion	$50,000
12	Increase Construction, Renovation and Demolition Material Diversion	$50,000
13	Enhance Public Space Waste Management	$20,000
	Total	**$320,000 - $345,000**

The 10 year operating and capital projections for the CRD's solid waste services, including the proposed SWMP investments and resulting tonnage reductions, can be funded by tipping fees, program revenues, reserve balances and other projected revenues (including renewable natural gas), without the need for tax requisition or external debt. Schedule D shows the estimated financial impact of the projected expenditures and decreasing per capita disposal.

10 Plan Flexibility

Due to changing circumstances and priorities that may evolve over time, and with the input of the Solid Waste Advisory Committee and interested parties, all major actions identified in the Plan will be reviewed for appropriateness before implementation. This will generally occur on an annual basis. The Plan's implementation schedule will be flexible enough to reflect the availability of technologies that may arise over time, as well as the potential changes in regional issues and priorities. In addition, it will also take into account the financial priorities of member municipalities and other partners, the availability of funding to undertake actions listed in this Plan, and the availability of contractors and service providers.

The Plan is a "living document" that may be amended to reflect new considerations, technologies and issues as they arise.

An amendment of this Plan would be required if there were major changes to the solid waste management system of the following nature:

a. The opening (or changes to the location or status) of a site or facility that is *not* already identified in this *Plan* and requires an authorization under BC's Environmental Management Act; or any other facility that could have an adverse impact to human health or the environment, as determined by the BC Environmental Management Act;
b. Waste import / export options which would significantly impact the CRD's or neighbouring regional district's solid waste systems, or not conform to provincial legislation, goals and/or waste reduction targets;
c. Significant changes to the *Plan's* disposal targets or reductions in programs supporting the first 3Rs;
d. A change in the boundary of the *Plan*, which would significantly change the amount of solid waste to be managed under the *Plan* or significantly change the population of the *Plan* area;
e. The addition, deletion or revision of policies or strategies related to the conditions outlined in the Minster's approval letter; and
f. Major financial changes that warrant seeking elector assent.

If a Plan amendment becomes necessary, the CRD would need to undergo a public consultation process and submit an amended plan to the Minister of Environment for approval, along with a detailed consultation report.

11 Plan Monitoring and Measurement

The implementation of the Solid Waste Management Plan will be monitored to determine its on-going effectiveness. As part of this monitoring, CRD staff will review and report out on regional demand as it relates to Hartland Landfill capacity. Annual measurement and monitoring allows for course corrections to be made in a timely manner, and to consider strengthening plan targets.

The following monitoring and measurement actions will be undertaken.

1. **Plan Monitoring:** Monitoring progress on the Plan's implementation will be undertaken by the Solid Waste Advisory Committee on an annual basis. This will maintain the linkage between the development of the plan and its implementation. The terms of reference for the Solid Waste Advisory Committee are included in this Plan as Schedule A.

2. **Annual Reporting**: On an annual basis, CRD staff will continue to prepare and publicize an Environmental Resource Management Progress Report that describes the CRD's current solid waste management activities and provides several metrics including the amount of waste landfilled per capita. This report will include the status of the Plan's implementation and progress toward the Plan's targets. Additionally, the report will identify any challenges or opportunities that are affecting (or have the potential to affect) the Plan's implementation. This report will be provided to the Solid Waste Advisory Committee and the Board. It will also be promoted publicly through a range of CRD communications channels.

3. **BC Disposal Calculator:** CRD will continue to compile data annually on all of the municipal solid waste disposal activities in the regional district for reporting to the BC Ministry of Environment's on-line disposal calculator.

4. **Interim Assessment / Plan Update:** As per the BC Guidelines for Solid Waste Management Planning, five years into the implementation of the Plan, the CRD intends to carry out a review of the plan's implementation and effectiveness. The CRD also intends to undertake a Plan renewal after ten years.

5. **Waste Composition Study:** The CRD has been undertaking waste composition studies approximately every 5 years since 1990. The CRD will continue undertake these studies to provide valuable insight into how the Plan's implementation is affecting what is landfilled. This information will also help to inform the preparation of the Interim Assessment and next Plan renewal.

12 Inter-Regional District Cooperation

The CRD recognizes the value of collaborating with other regional districts with an aim to improve cost-efficiencies of providing solid waste services, and also to learn from each other through sharing ideas and experiences. To this end, the CRD are members of the following organizations:

- Coast Waste Management Association
- Recycling Council of BC
- Association of Vancouver Island and Coastal Communities Solid Waste Management Committee
- BC Product Stewardship Council
- Solid Waste Association of BC

Additionally, the CRD has partnered with the Cowichan Valley Regional District and the Regional District of Nanaimo to undertake solid waste technical studies of mutual interest.

During the implementation of this Plan, the CRD will continue to participate in the above organizations as a means of collaborating with other BC regional districts, and particularly to work on solid waste solutions for Vancouver Island.

13 Plan Amendments

This Plan represents the current understanding and approach to the solid waste management challenges being faced by the CRD. The Plan is a "living document" that may be amended to reflect new considerations, technologies and issues as they arise.

The need for a plan amendment will be triggered by major changes to the solid waste management system which would include:

a. The opening of a site or facility that requires an authorization under the Environmental Management Act that is not currently recognized in this Plan;
b. Any other facility that could have an adverse impact to human health or the environment, as determined by the BC Environmental Management Act;
c. Waste import / export options which would significantly impact the regional district's or neighbouring solid waste systems, or not conform to provincial legislation, goals and / or targets; and
d. Major financial changes that warrant seeking elector assent.

When a plan amendment becomes necessary, the CRD will undergo a public consultation process and submit an amended plan to the Minister of Environment for approval, along with a detailed consultation report.

14 Dispute Resolution

Although consultation efforts may prevent or minimize conflicts, at times disputes may arise during development or implementation of the plan. To this end, a dispute resolution procedure has been included to address complaints or concerns that occur during plan development or implementation.

This dispute resolution procedure, included as Schedule B, may apply to the following types of conflicts that could arise during plan implementation:

- Administrative decisions made by the regional district such as:
  - The issuance of a license
  - Interpretation of a statement, bylaw, policy or provision in the plan
- Any other matter not related to a proposed change to the wording of the plan or an operating certificate

Schedule A: Solid Waste Advisory Committee Terms of Reference

PREAMBLE

The Capital Regional District (CRD) Solid Waste Advisory Committee is an Advisory Committee established by the CRD Environmental Services Committee to provide input on solid waste management matters and meet the requirements of the Ministry of Environment's Guide to Solid Waste Management Planning for an advisory committee on the development and implementation of the Solid Waste Management Plan (SWMP).

The Committee's official name is to be: Solid Waste Advisory Committee

1.0 PURPOSE

The mandate of the Committee includes advising the Environmental Services Committee regarding the following:

a. providing input on major solid waste management matters
b. serving as the advisory committee to the Steering Committee (Environmental Services Committee) on the development of Revision 3 of the SWMP
c. acting as plan monitoring advisory committee for the new SWMP, once approved

2.0 ESTABLISHMENT AND AUTHORITY

a. The Environmental Services Committee will:
    - appoint the committee members for up to a three-year term
    - act as the Steering Committee for Revision 3 of the SWMP
    - appoint a member as the liaison between the advisory committee and the Environmental Services/Steering Committee
b. The Committee will report its input to the Environmental Services Committee for consideration. The CRD Board is the final decision-making authority.

3.0 COMPOSITION

The Committee shall consist of members representing a diversity of background, interests and geographical location, representing a balance between technical and non-technical members and industry and public members, as follows:

Representation	Number of Members
Regional district director (member of Environmental Services Committee)	1
Municipal engineering staff who are involved in solid waste collection	2
Electoral Area representative	1
First Nations	2
Environmental organizations	1
Business groups	1
Non-profit group with an interest in solid waste (e.g. reuse organization)	1
Large waste generators (industrial, commercial, institutional)	2
Owners/operators of private waste management facilities	2
Private sector industry collection service providers	2
Composting industry representative	1
Product stewardship agency	1
Community representative (representing Prospect Lake/Hartland area)	1
Public representatives, at large	3
Willis Point representative	1
District of Highlands representative	1
Solid Waste Technology representative	1

4.0 PROCEDURES

a. The CRD Board Procedures Bylaw will apply.
b. Member from Environmental Services Committee shall be Chair of Solid Waste Advisory Committee.
c. The committee shall meet at the call of the Chair and have special meetings, as required.
d. The agenda will be finalized in consultation between staff and the Chair.
e. A quorum is a majority of the committee membership and is required to conduct committee business.

5.0 RESOURCES AND SUPPORT

a. The Senior Manager, Environmental Resource Management, will lead the coordination and allocation of resources to the Committee.
b. Minutes and agendas are prepared and distributed by the Environmental Resource Management division.

Schedule B: Plan Dispute Resolution Procedures

Disputes will be settled using the following procedure:

Negotiation	• Parties involved in the dispute shall make every effort to resolve the dispute on their own through non-facilitated communication. If necessary, the parties will provide each other with a written summary of their position and any relevant supporting documentation. • Parties may agree to make use of a facilitator.
If this is unsuccessful, then:	
Environmental Services Committee	• Parties involved in the dispute will have opportunity to speak to the Committee. • Committee will review, consider and provide recommendations to the Board. Committee may refer to the Solid Waste Advisory Committee.
Then:	
CRD Board	• Board will receive recommendations from the Committee and settle the dispute; or, recommend mediation.
If the board is unable to settle the dispute, then:	
Mediation	• A neutral, impartial third-party facilitator who is acceptable to all the parties to the dispute will be selected. Using appropriate mediation techniques, the facilitator will attempt to develop a solution which satisfies all parties. The facilitator has no decision-making authority. If the parties cannot agree on a mediator, the matter shall be referred to the BC Mediation Roster Society or equivalent roster organization for selection of a mediator. • All efforts will be made to reach an agreement through mediation. • Costs for mediation will be shared by the parties in dispute.
If this is unsuccessful, then:	
Independent Arbitrator	• If the dispute cannot be resolved by a mediator, the matter will be referred to arbitration and the dispute will be arbitrated in accordance with any applicable legislation. A neutral, impartial third-party arbitrator who is acceptable to all the parties to the dispute will be selected. The arbitrator hears each party's evidence and arguments and renders a final, binding decision. • Costs for arbitration shall be apportioned at the discretion of the arbitrator.

Further to the above, the following principles will be followed if and when the dispute resolution process is invoked:

i. The parties will make all reasonable efforts to attempt to resolve the dispute in an amicable manner without outside intervention

ii. Disputes will be attempted to be resolved as early and at the lowest administrative level as possible; every effort will be made to avoid disputes requiring a formal resolution process

iii. The formal process is not intended to deal with inconsequential or frivolous disputes

iv. The cost of mediation or adjudication will be shared by the parties to the dispute

v. Information or data related to the dispute will be shared by the parties

vi. Rules of confidentiality and freedom of information will apply

Schedule C: Implementation Schedule

	Ongoing
	Planning/Design Phase
	Implementation Phase

Implementation Schedule is subject to revision based on annual review and Board direction.
Actions listed have been condensed in this schedule for readability, full descriptions can be found in Section 5.

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Reduction and Reuse										
Strategy #1: Continue and Enhance Education Programs (medium-term, 5 year goal)										
A. Ensure ongoing, up-to-date promotion and education resources										
B. Incorporate behaviour change components wherever possible										
C. Expand and prioritize education programs for the multi-family and industrial, commercial and institutional sectors										
D. Enhance K-12 school program to include concepts of zero waste and the circular economy										
E. Collaborate with stakeholders on education campaigns										
F. Continue supporting environmental stewardship recognition										
G. Continue to engage residents on solid waste matters										
Strategy #2: Encourage Waste Prevention (medium term, 5 year goal)										
A. Promote less consumption and advocate for consumer responsibility										
B. Establish a community-based waste reduction grant program										
C. Support municipal, provincial and federal single-use item reduction efforts										
D. Promote sustainable and/or packaging-free purchasing options										
E. Advocate to limit or eliminate manufacturing, distribution and/or sale of single use and non-recyclable materials										
F. Advocate provincially and federally for sustainable product design										

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Strategy #3: Support Reduction of Avoidable Food Waste (short-term, 3 year goal)										
A. Continue to support residential food waste reduction										
B. Continue to encourage the donation of edible food and support of food recovery organizations										
C. Advocate for regulations that support avoiding food waste										
Strategy #4: Support Reuse Activities in the Region (medium term, 5 year goal)										
A. Continue to provide funding for non-profit recycling organizations for managing unusable donations										
B. Continue to support and promote donations to reuse establishments										
C. Support reuse, renting and sharing programs										
D. Investigate the possibility of a free store at Hartland or other facilities										
Strategy #5: Support Local Governments in Working towards Zero Waste and a Circular Economy (medium term, 5 year goal)										
A. Develop model language for use by local governments										
B. Work with local governments to identify need for solid waste facilities/zoning for activities										
C. Use policy tools to enable local recycling infrastructure										
D. Investigate 'pay-as-you-throw' principles										
E. Investigate use of clear bags for garbage/recyclables collection										
Strategy #6: Continue and Enhance Policy Development (medium term, 5 year goal)										
A. Develop model procurement policies for use by local governments, non-profits, etc.										
B. Continue to expand material bans when viable alternatives exist										
C. Investigate licensing waste management facilities in the region										
D. Investigate regulatory mechanisms to manage municipal solid waste and recyclable materials in the region										
E. Investigate options for managing debris from extreme weather										

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Recycling										
Strategy # 7: Increase Residential Diversion (medium term, 5 year goal)										
A. Continue to promote residential diversion of recyclable and organic materials										
B. Support depot diversion efforts for non-curbside materials										
C. Encourage local processing and markets for residential recyclables										
D. Develop tools to support event recycling										
Strategy #8: Increase Multi-Family Diversion (medium term, 5 year goal)										
A. Allocate resources to support multi-family recycling										
B. Develop multi-family waste source separation requirements										
C. Develop policy guide and recommendations for waste management in multi-family developments										
D. Implement support for multi-family recycling										
Strategy #9: Increase Industrial, Commercial and Institutional Diversion (medium term, 5 year goal)										
A. Allocate resources to increase ICI diversion										
B. Advocate to expand the packaging and paper product extended producer responsibility program to the industrial, commercial and institutional sector										
C. Create a business waste reduction toolkit, including education about circular economy principles										
D. Encourage municipalities to require waste management plans with business licenses										
E. Develop policy guide for industrial, commercial and institutional waste management space and access requirements										
F. Develop industrial, commercial and institutional waste source separation requirements										
G. Investigate shifting disposal ban enforcement to industrial, commercial and institutional generator, rather than hauler										

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Strategy #10: Support Existing and New Extended Producer Responsibility Programs (medium term, 5 year goal)										
A. Advocate to the province to expand extended producer responsibility programs										
B. Increase consumer awareness about extended producer responsibility programs.										
C. Advocate for increased return-to-retailer opportunities										
D. Advocate federally to standardize extended producer responsibility programs across Canada										
Strategy #11: Increase Organics Diversion and Processing Capacity (short term, 3 year goal)										
A. Continue to promote organic waste material diversion										
B. Continue to utilize and monitor existing processing capacity										
C. Support compost markets by purchasing back materials										
D. Develop guidelines for use of compostable products and packaging										
Strategy #12: Increase Construction, Renovation & Demolition Material Diversion (short term , 3 year goal)										
A. Develop a comprehensive construction, renovation & demolition strategy										
B. Develop educational tools to support construction, renovation & demolition material diversion										
C. Promote green building standards										
D. Develop and use policy tools to maximize diversion and to align management plans										
E. Investigate beneficial uses of construction, renovation & demolition waste, including a clean wood waste landfill ban										
F. Investigate banning or surcharging mixed construction, renovation & demolition loads at the landfill										
G. Further develop programs for managing hazardous materials (like asbestos)										
Strategy #13: Encourage Proper Public Space Waste Management Activities (med term, 5 year)										
A. Develop educational materials to prevent and reduce litter and abandoned materials										

Plan Strategies & Actions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
B. Continue promoting alternatives to abandoned materials and illegal dumping activity										
C. Develop a regional approach to prevention of illegal dumping										
D. Investigate developing regionally-aligned litter bylaws										
E. Develop and pilot methodologies to 'observe, record and report' abandoned material and illegal dumping incidents										
F. Investigate options for large bulky item disposal										
Recovery and Residuals Management										
Strategy #14: Optimize Landfill Gas Management										
A. Continue to maximize and optimize the capture of landfill gas for beneficial use										
B. Investigate collaboration opportunities with educational institutions										
Strategy #15: Enhance Hartland Disposal Capacity										
A. Review Hartland tipping fee structure and ban enforcement levels										
B. Continue to operate Hartland Landfill using best practices										
C. Develop design options to maximize disposal capacity of Hartland Landfill to until 2100 and beyond										
D. Continue to conduct research and investigate and report out on emerging waste management technologies										

Schedule D: Estimated Financial Impact

ERM Budget Implications Arising From Achieving 250 kg Per Capita Disposal Rate by 2030										
	2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Total Revenue [1, 2, 4]	**$24,413,500**	**$24,472,500**	**$24,182,090**	**$27,322,276**	**$27,163,064**	**$27,004,459**	**$26,736,469**	**$26,469,099**	**$26,202,355**	**$25,881,243**
Total Expenditures[3]	$25,462,000	$24,453,000	$24,178,000	$31,403,000	$27,403,000	$27,403,000	$27,403,000	$28,087,000	$28,275,000	$28,742,000
Net Annual Surplus/Deficit	**-$1,048,500**	**$19,500**	**$4,090**	**-$4,080,724**	**-$239,936**	**-$398,541**	**-$666,531**	**-$1,617,901**	**-$2,072,645**	**-$2,860,757**
Combined Reserve Fund Balance[3, 4]	$49,671,000	$34,824,000	$19,671,000	$15,590,276	$15,350,340	$14,951,799	$14,285,268	$12,667,366	$10,594,721	$7,733,964
Per Capita Disposal Rate	316	313	310	302	295	287	278	269	260	250

[1] General refuse tipping fee is $110 per tonne

[2] Controlled waste and asbestos tipping fees are $157 per tonne

[3] From CRD Finance and includes Sustainability, Equipment, Capital, Closure and Air Space reserve funds (2021 budget doc - Sept 2020).

[4] The Hartland renewable natural gas project significantly impacts reserve balances to fund construction (2022-2023) and increases revenues starting in 2024